TECHNICAL RESOURCES CENTER - P.C.C.
00001161550

ACP
AUTORIDAD DEL CANAL DE PANAMA

Panama Canal

Atlantic Locks Concept Design
Third Lane Lock
July 2003

US Army Corps of Engineers

UNAUTHORIZED USE OR DUPLICATION IS PROHIBITED
PROHIBIDA LA REPRODUCCION SIN AUTORIZACION DEL AUTOR

CENTRO DE RECURSOS TECNICOS
AUTORIDAD DEL CANAL DE PANAMA

Drawing Number	Description
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Drawing Number	Description
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See Volume 2, Appendix I for Gate Operating Machinery Drawings	
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See Volume 2, Appendix I for Electrical System Drawings	
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US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
PB NO.:
Sheet X of X

Design by: J.E. TANKOSH
Chk by: JET
Dwn by: JET
Rev by: WAH
Submission Date: MAR 2003
Revision Date: X

ACP
ALTERNATIVE DEL CANAL DE PANAMA

User: jjenkins
Date: 28-MAR-2003 12:49
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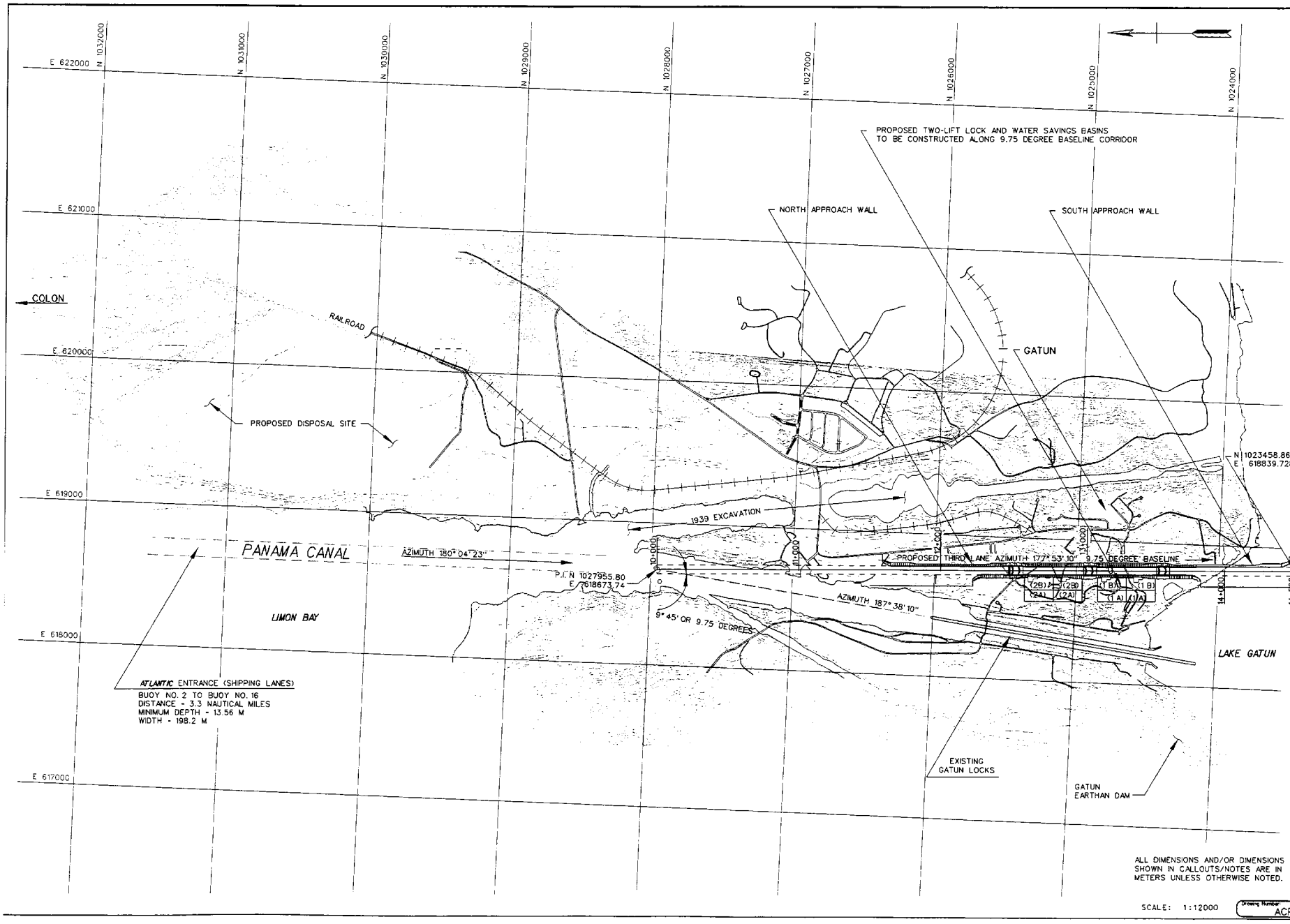
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
INDEX

Drawing Number: ACP-R-0/1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E 621000
E 620000
E 619000
E 618000
E 617000
COLON
RAILROAD
PROPOSED DISPOSAL SITE
PANAMA CANAL
LIMON BAY
AZIMUTH 180° 04' 23"
P.I. N 1027955.80
E 618673.74
9° 45' OR 9.75 DEGREES
1939 EXCAVATION
PROPOSED THIRD LANE AZIMUTH 177° 53' 10" 9.75 DEGREE BASELINE
AZIMUTH 187° 38' 10"
10+000
11+000
12+000
13+000
14+000
14+500
(2B) (2B)
(2A) (2A)
(1 B) (1 B)
(1 A) (1 A)
NORTH APPROACH WALL
SOUTH APPROACH WALL
PROPOSED TWO-LIFT LOCK AND WATER SAVINGS BASINS
TO BE CONSTRUCTED ALONG 9.75 DEGREE BASELINE CORRIDOR
GATUN
N 1023458.862
E 618839.728
LAKE GATUN
EXISTING
GATUN LOCKS
GATUN
EARTHAN DAM
ATLANTIC ENTRANCE (SHIPPING LANES)
BUOY NO. 2 TO BUOY NO. 16
DISTANCE - 3.3 NAUTICAL MILES
MINIMUM DEPTH - 13.56 M
WIDTH - 198.2 M
ALL DIMENSIONS AND/OR DIMENSIONS
SHOWN IN CALLOUTS/NOTES ARE IN
METERS UNLESS OTHERWISE NOTED.
SCALE: 1:12000
Drawing Number
ACP-R-3/1
US Army Corps of Engineers
Pittsburgh District
Submitted by:
W.A. HARKNESS, P.E.
TECHNICAL LEAD
Sheet 1 of 1
Prepared by:
T. SHILLEY, P.E.
Checked by:
TDS/ATR
Date:
MAR 2003
Scale:
X
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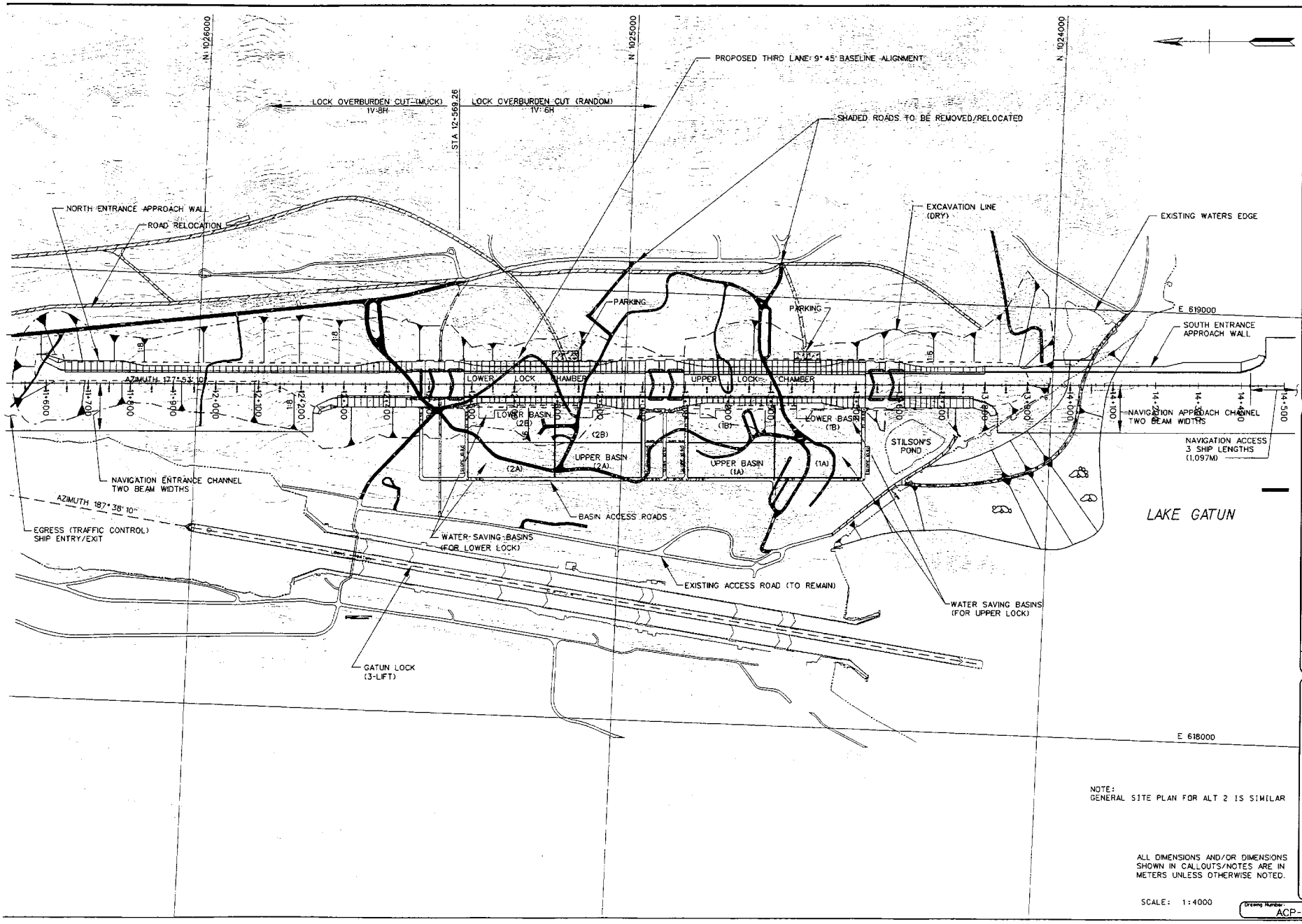
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
GENERAL SITE MAP
ALT 1 AND ALT 2



NOTE:
GENERAL SITE PLAN FOR ALT 2 IS SIMILAR

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:4000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Design by: ALLWES/SHILLEY
Dwn by: DJM
Ckd by: RA/ATR
Submission Date: MAR 2003
Revision Date: X
FB NO.:
Sheet 1 of 1

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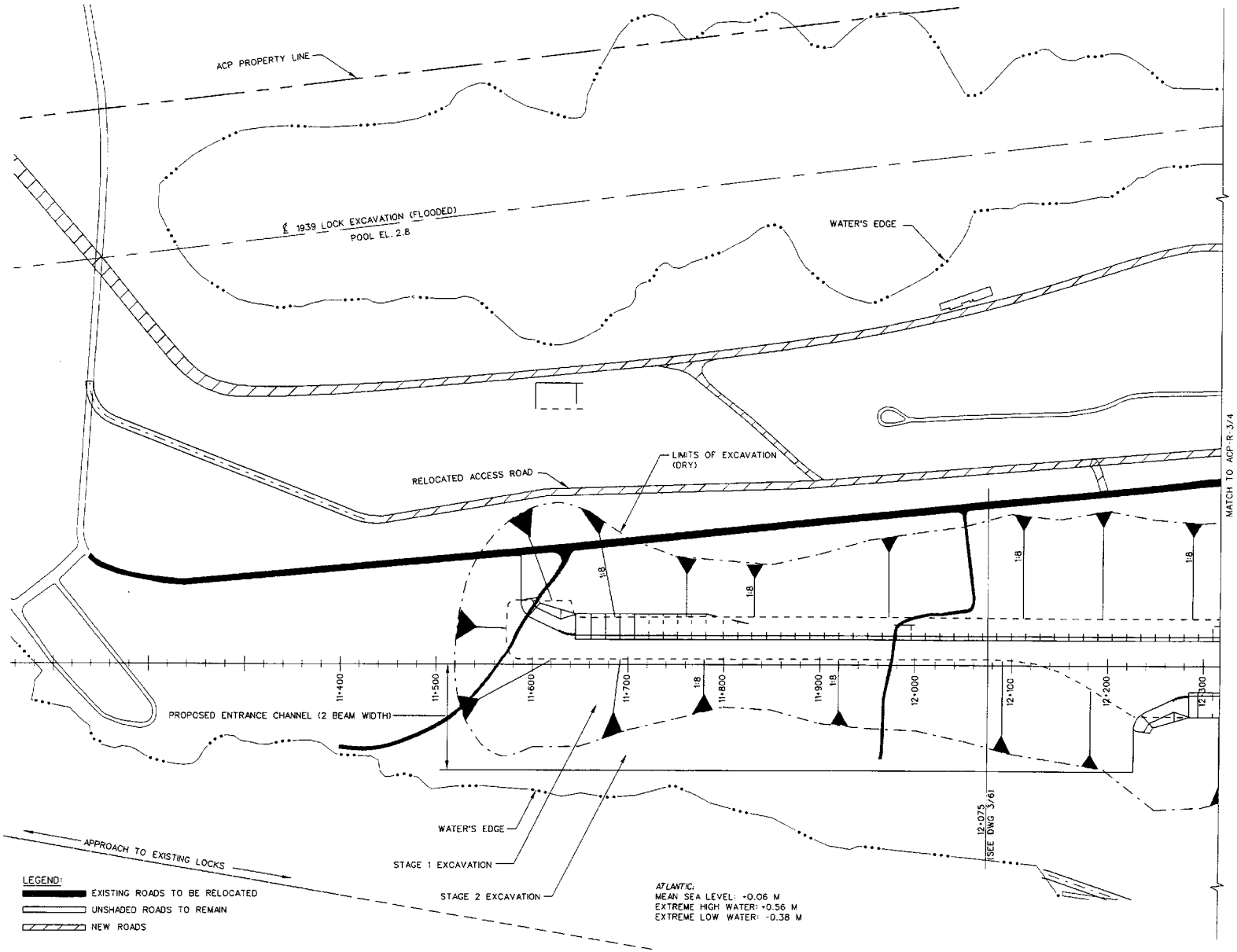
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
GENERAL SITE PLAN, ALT 1

Drawing Number: ACP-R-3/2



ATLANTIC:
MEAN SEA LEVEL: +0.06 M
EXTREME HIGH WATER: +0.56 M
EXTREME LOW WATER: -0.38 M

NOTE:
NORTH ENTRANCE APPROACH FOR ALT2 IS SIMILAR

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:2000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet 1 of 3

Design by: SHILLEY/IERA
Dwn by: DJM
Ckd by: TDS/ATR
Submission Date: MAR 2003
Revision Date: X

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User: jtankosh
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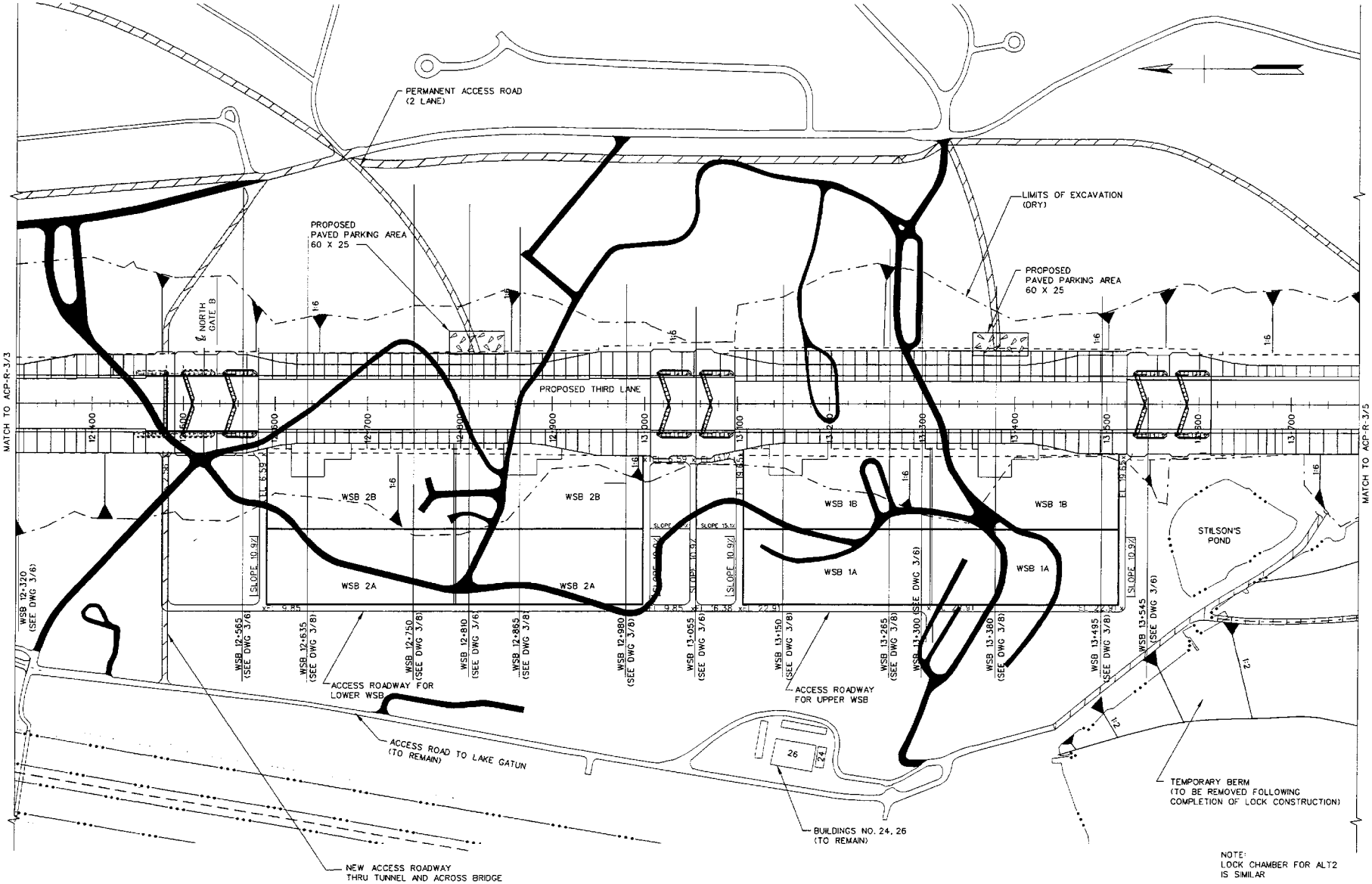
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
DETAILED SITE PLAN, ALT 1 - PART 1
NORTH ENTRANCE APPROACH

Drawing Number: ACP-R-3/3



LEGEND:

- EXISTING ROADS TO BE RELOCATED
- UNSHADED ROADS TO REMAIN
- NEW ROADS

NOTE:
LOCK CHAMBER FOR ALT2 IS SIMILAR

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:2000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: SHILLEY/IERA
Dwn by: DJM
Ckd by: TDS/ATR
Submission Date: MAR 2003
Revision Date: X
F/B NO.:
Sheet 2 of 3

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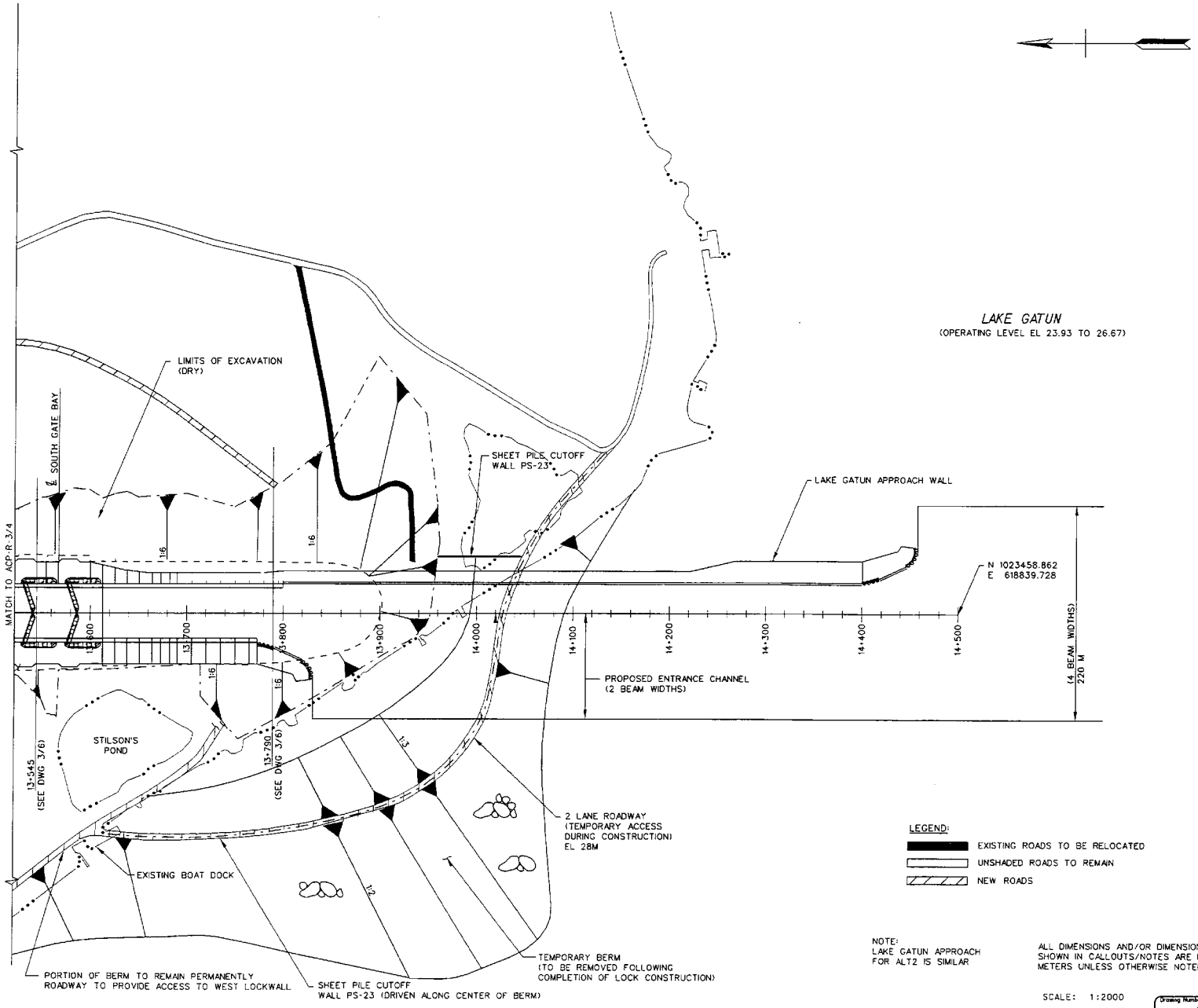
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
DETAILED SITE PLAN, ALT 1 - PART 2
LOCK CHAMBER

Drawing Number: ACP-R-3/4



LEGEND:

- EXISTING ROADS TO BE RELOCATED
- UNSHADED ROADS TO REMAIN
- NEW ROADS

NOTE:
LAKE GATUN APPROACH FOR ALT2 IS SIMILAR

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:2000

US Army Corps of Engineers
Pittsburgh District

ACP
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Pen Table:
Color Table

Design by: SHILLEY/IERA
Drawn by: DJM
Chkd by: TOS/ATR
Submission Date: MAR 2003
Revision Date: X
Submitted by: W.A. HARKNESS, P.E.
TECHNICAL LEAD
PB NO.:
Sheet 3 of 3

Symbol	Description	Date	Appr.
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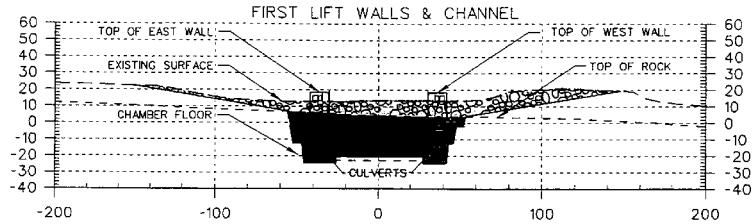
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
DETAILED SITE PLAN, ALT 1 - PART 3
LAKE GATUN APPROACH

Drawing Number: ACP-R-3/5



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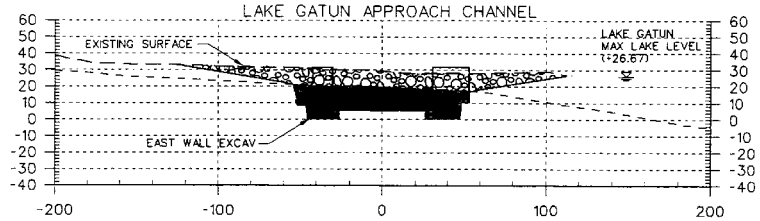

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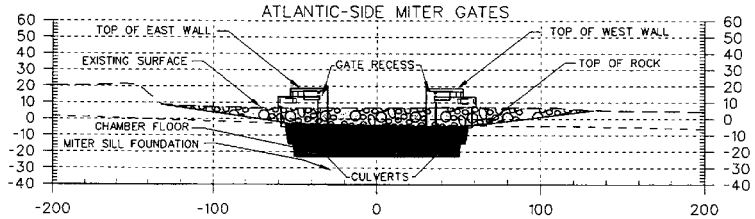

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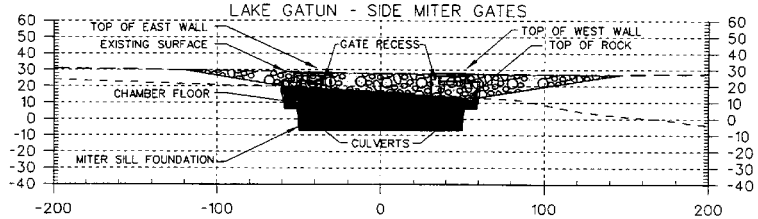

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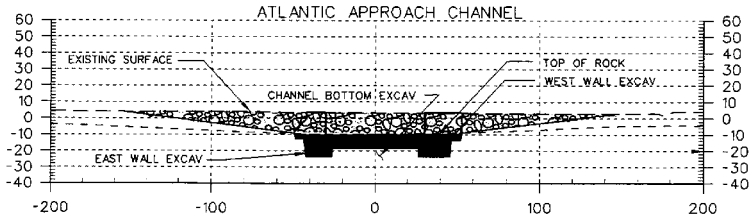

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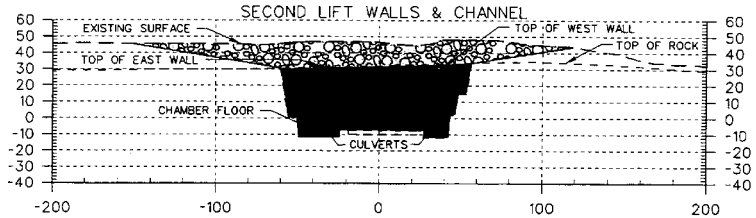

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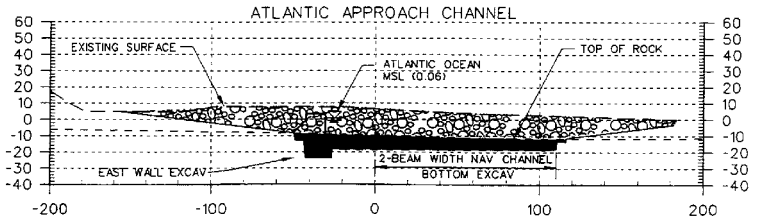

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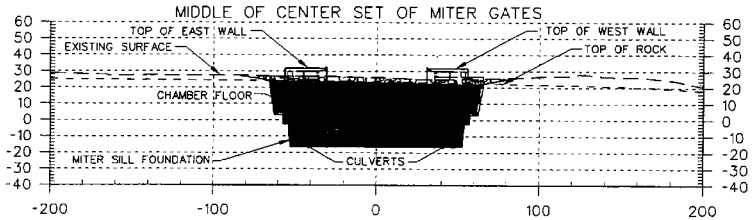

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LEGEND

- LOCK OVERBURDEN EXCAVATION
- LOCK ROCK EXCAVATION

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:1500

Drawing Number: ACP-R-3/6

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet 1 of 2

Design by: SILVIO IERA, P.E.
Drawn by: DJM
Checked by: TDS/ATR
Submission Date: MAR 2003
Revision Date: X

ACP
AUTOBIRDAP INGENIERIA DE CANAL DE PANAMA

User: jlenseph
Date: 28-MAR-2003 17:51
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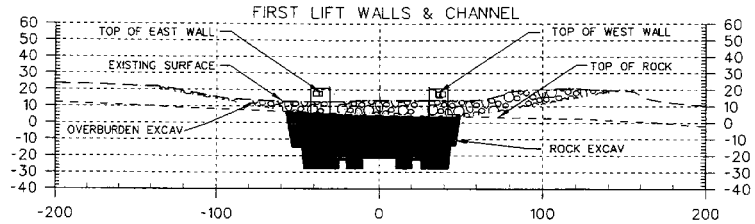
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK EXCAVATION
TYPICAL SECTIONS, ALT 1



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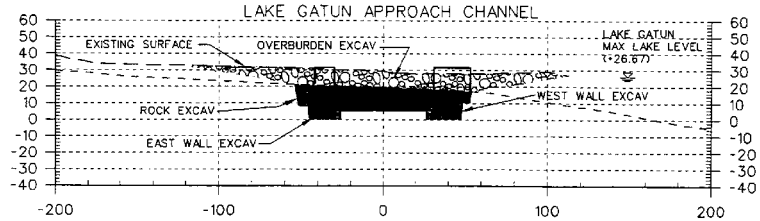

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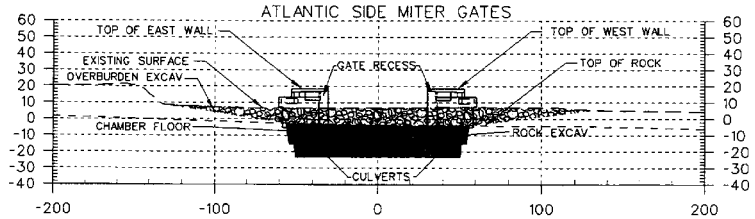

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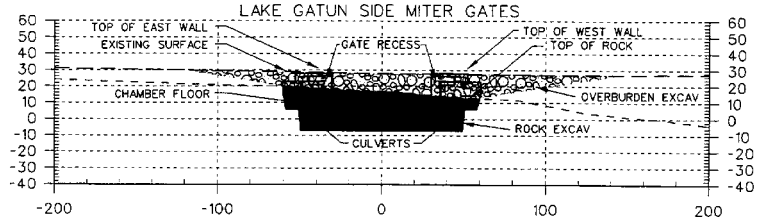

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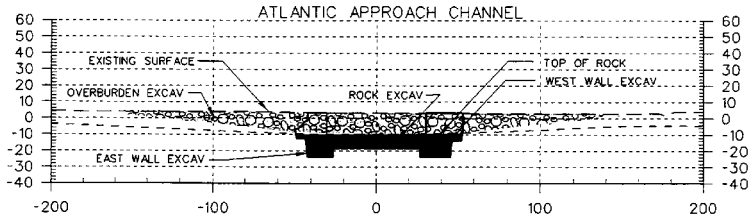

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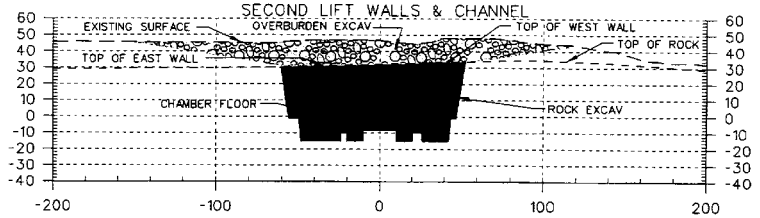

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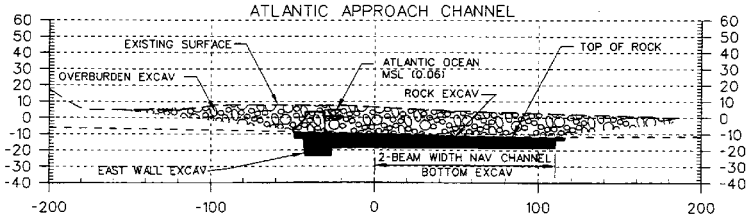

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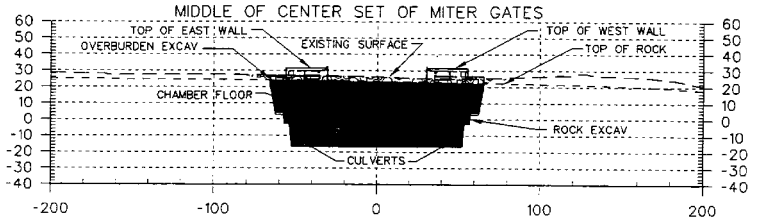

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LEGEND

LOCK OVERBURDEN EXCAVATION

LOCK ROCK EXCAVATION

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:1500

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet 2 of 2

Design by: SILVIO IERA, P.E.

Dwn by: DJM

Ckd by: TDS/ATR

Submission Date: MAR 2003

Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jhankesh
Date: 28-MAR-2003 12:51
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Color Table

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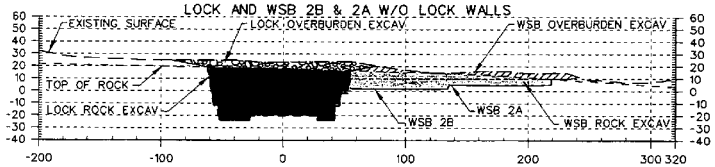
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK EXCAVATION
TYPICAL SECTIONS, ALT 2

Drawing Number: ACP-R-3/7

LEGEND

- LOCK OVERBURDEN EXCAVATION
- LOCK ROCK EXCAVATION
- WSB OVERBURDEN EXCAVATION
- WSB ROCK EXCAVATION

LOCK AND WSB 2B & 2A W/O LOCK WALLS



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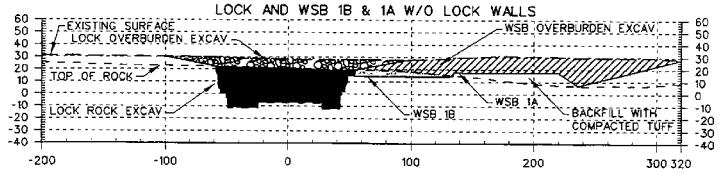
LOCK AND WSB 1B & 1A W/O LOCK WALLS



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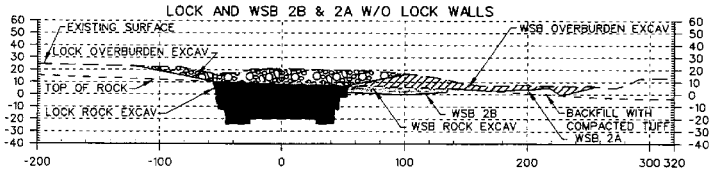
LOCK AND WSB 2B & 2A W/O LOCK WALLS



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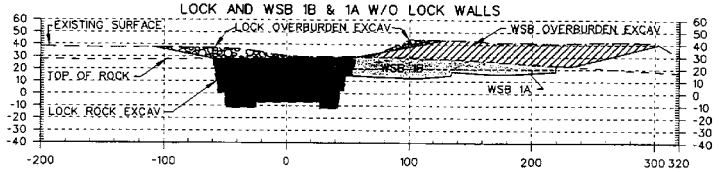

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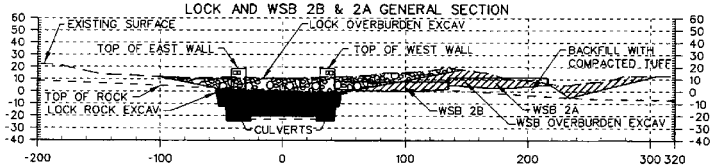
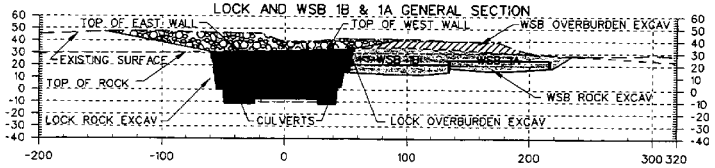
LOCK AND WSB 2B & 2A GENERAL SECTION



12+750.00

LOCK AND WSB 1B & 1A GENERAL SECTION



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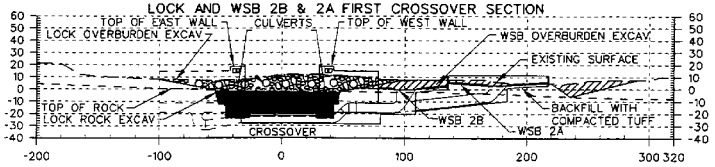

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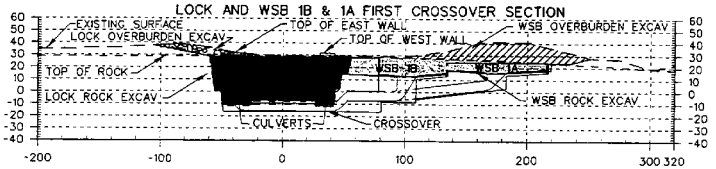

13+150.00

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:2000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: SILVIO IERA, P.E.

Dwn by: DJM

Ckd by: TDS/ATR

Submission Date: MAR 2003

Revision Date: X

FB NO.:

Sheet 1 of 1

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jtankosh
Date: 28-MAR-2003 12:52
Plot Scale: 2.000000:1.000000
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Color Table

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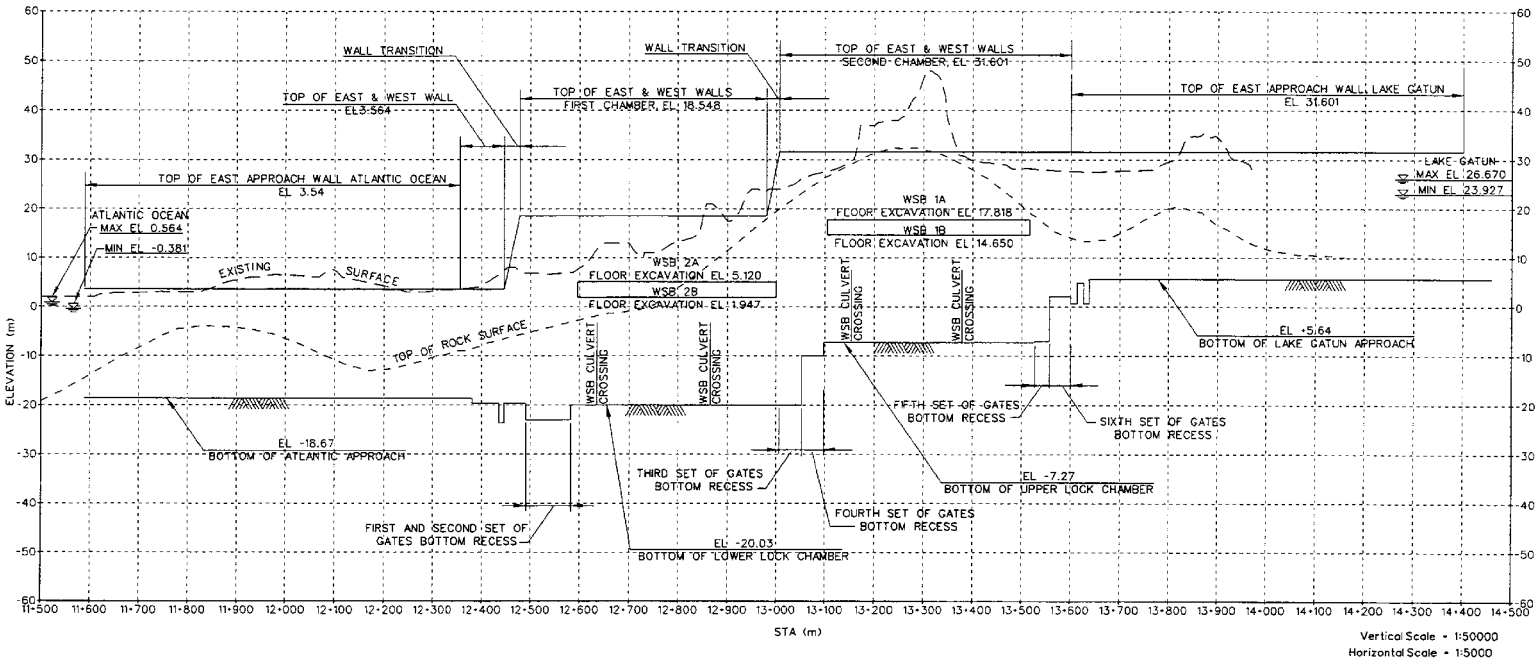
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
WSB EXCAVATION
SECTIONS

Drawing Number: ACP-R-3/8



PROFILE OF 9° 45' BASELINE ALIGNMENT, ALT 1

LEGEND
- EXISTING SURFACE
- TOP OF ROCK SURFACE
- TOP OF APPROACH WALL AND LOCKWALL
- EXCAVATION ELEVATION

NOTE:
PROFILE OF 9° 45' BASELINE ALIGNMENT FOR ALT 2 IS SIMILAR

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:5000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Design by: SILVIO IERA, P.E.
Drn by: DJM
Ckd by: TDS/ATR
Submission Date: MAR 2003
Revision Date: X
FB NO.:
Sheet 1 of 1

ACP
AUTOBIRAD DEL CANAL DE PANAMA
User: aiera
Date: 28-Mar-2003 15:22
Workspace: 0000000.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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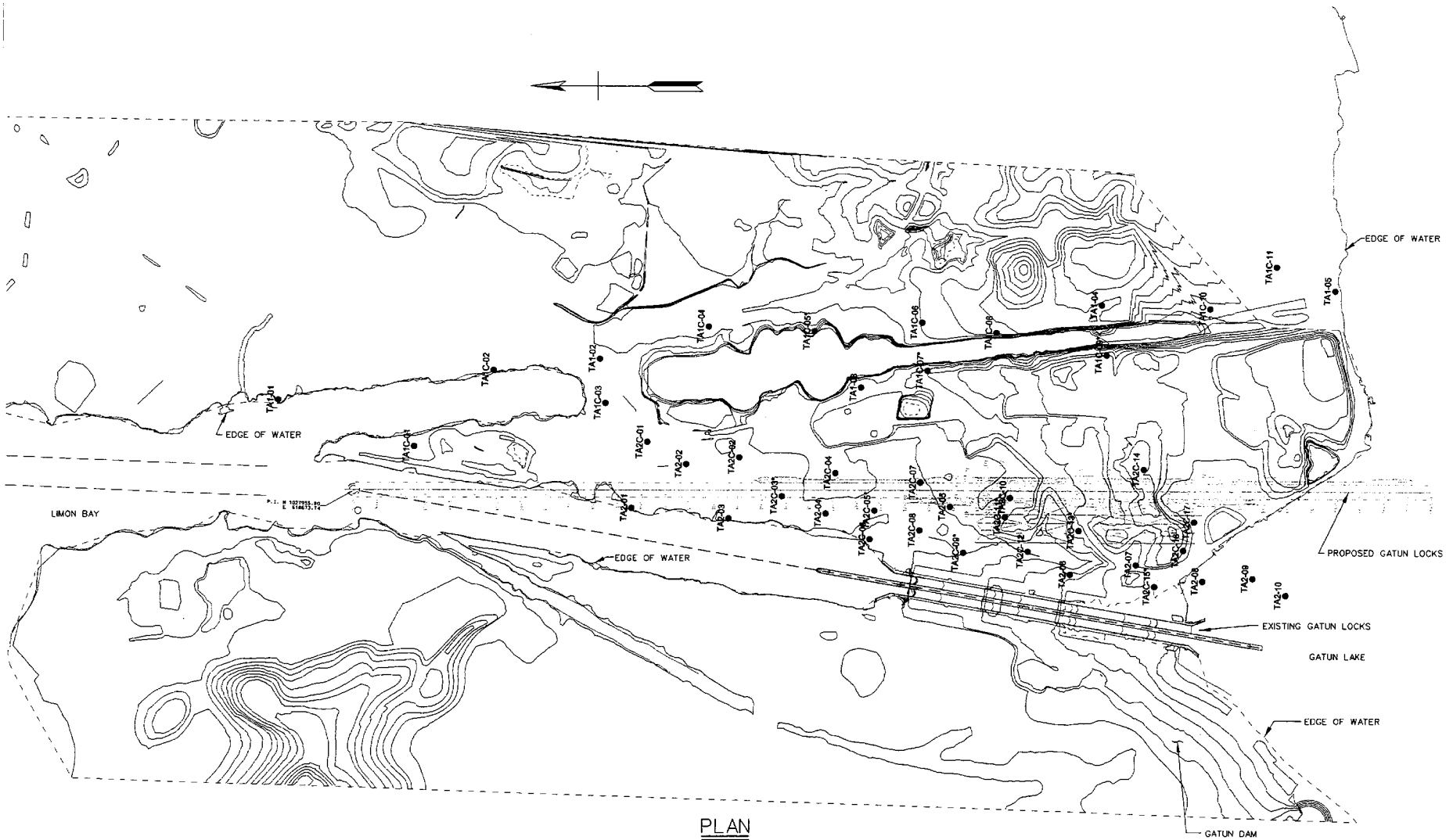
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
PROFILE OF 9.75 BASELINE, ALT 1

Drawing Number: ACP-R-3/9



PLAN

SCALE: 1:8000

LEGEND

● 2001 CORE BORING

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

0 200 400

SCALE: 1:8000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: J.F. BROWN

Dwn by: CDC | Ckd by: CT

Submission Date: MAR 2003 | Revision Date: X

IFB NO.:

Sheet X of X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jlankash
Date: 28-MAR-2003 12:52
Plot Scale: 2.0000001:000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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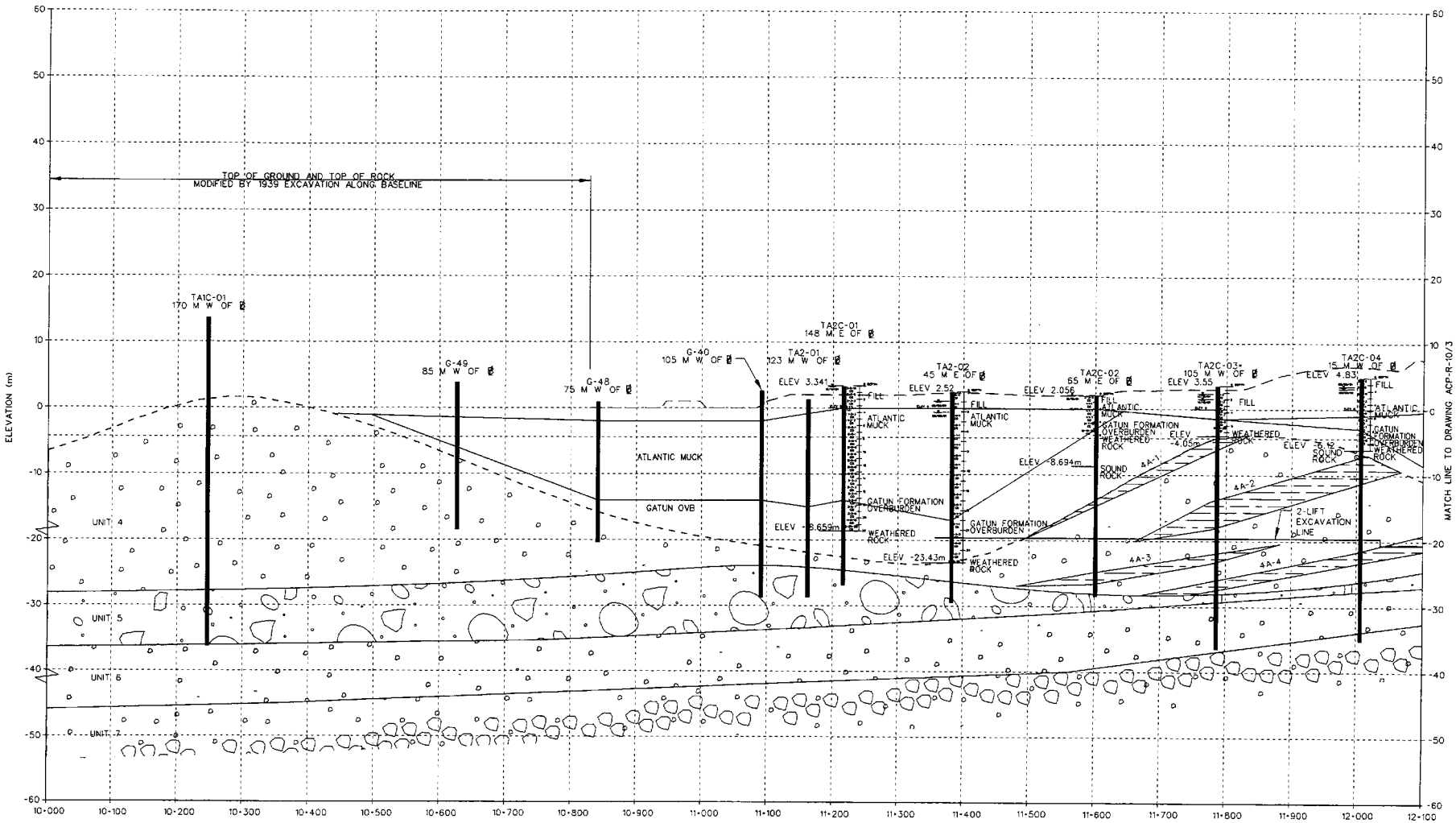
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
CORE BORINGS
PLAN

Drawing Number: ACP-R-10/1



PROFILE

SCALE: 1:3000

LEGEND

- UNIT 4 - TUFFACEOUS SANDSTONE
- UNIT 5 - CONGLOMERATE
- UNIT 6 - PUMICEOUS SANDSTONE
- UNIT 7 - TUFF

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

0 50 100
SCALE: 1:3000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Drawn by: J.F. BROWN
Dwn by: FDC
Ckd by: CT
Submission Date: MAR 2003
Revision Date: X
F/B No.:
Sheet X of X

ACP

User: Thomas MITSUBISHI DOLCHAL DR PANAMA
Date: 28-MAR-2003 12:53
Plot Scale: 2.000000:1.000000
Plot Date:
Color Table

Symbol	Description	Date	Appr
X			X
X			X

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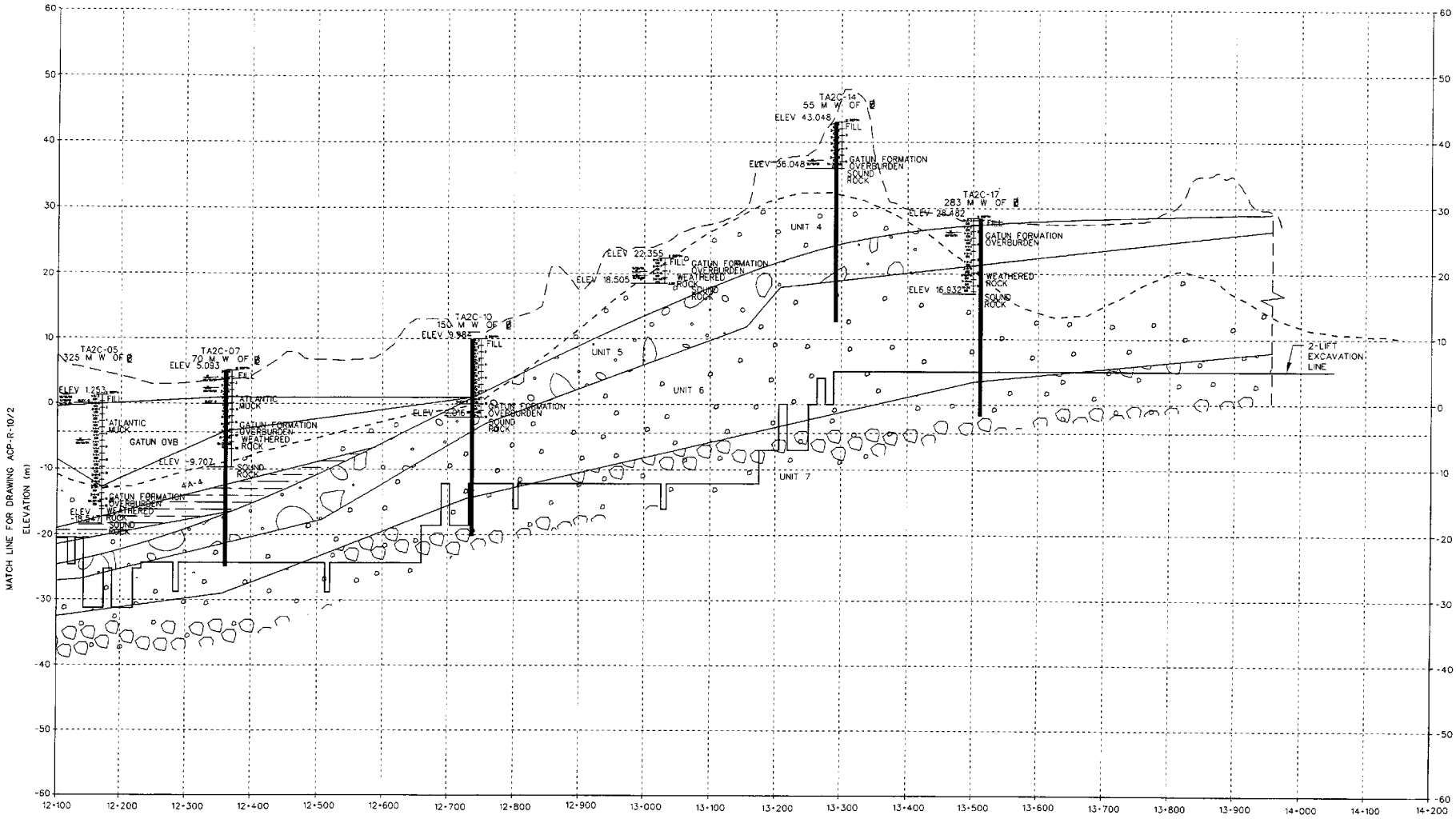
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
GEOLOGIC PROFILE ON BASELINE
STA 10+000 TO STA 12+100

Drawing Number: ACP-R-10/2



LEGEND

- UNIT 4 - TUFFACEOUS SANDSTONE
- UNIT 5 - CONGLOMERATE
- UNIT 6 - PUMICEOUS SANDSTONE
- UNIT 7 - TUFF

PROFILE

SCALE: 1:3000

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

0 50 100

SCALE: 1:3000

US Army Corps of Engineers
Pittsburgh Distric

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Design by: J. F. BROWN
Draw by: CDC
Chkd by: CT
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jbrown
Date: 28-MAR-2003 12:53
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Pen Table: Color Table

Symbol	Description	Date	Appr.
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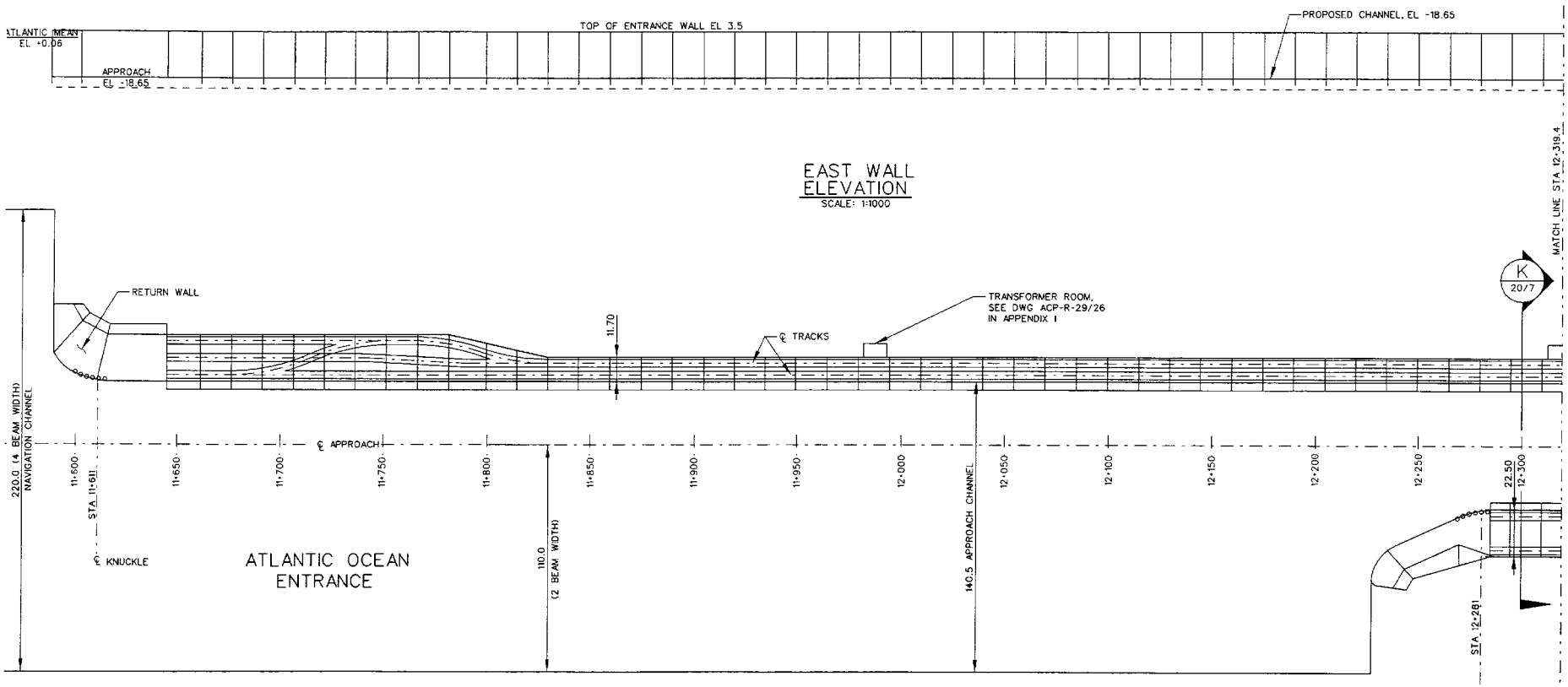
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
GEOLOGIC PROFILE
STA 12+100 TO STA 14+200

Drawing Number: ACP-R-10/3



PLAN - NORTH ENTRANCE WALL
SCALE: 1:1000

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet X of X

Design by: T.SULLIVAN
Dwn by: JET/BH
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: Jankosh
Date: 28-MAR-2003 15:23
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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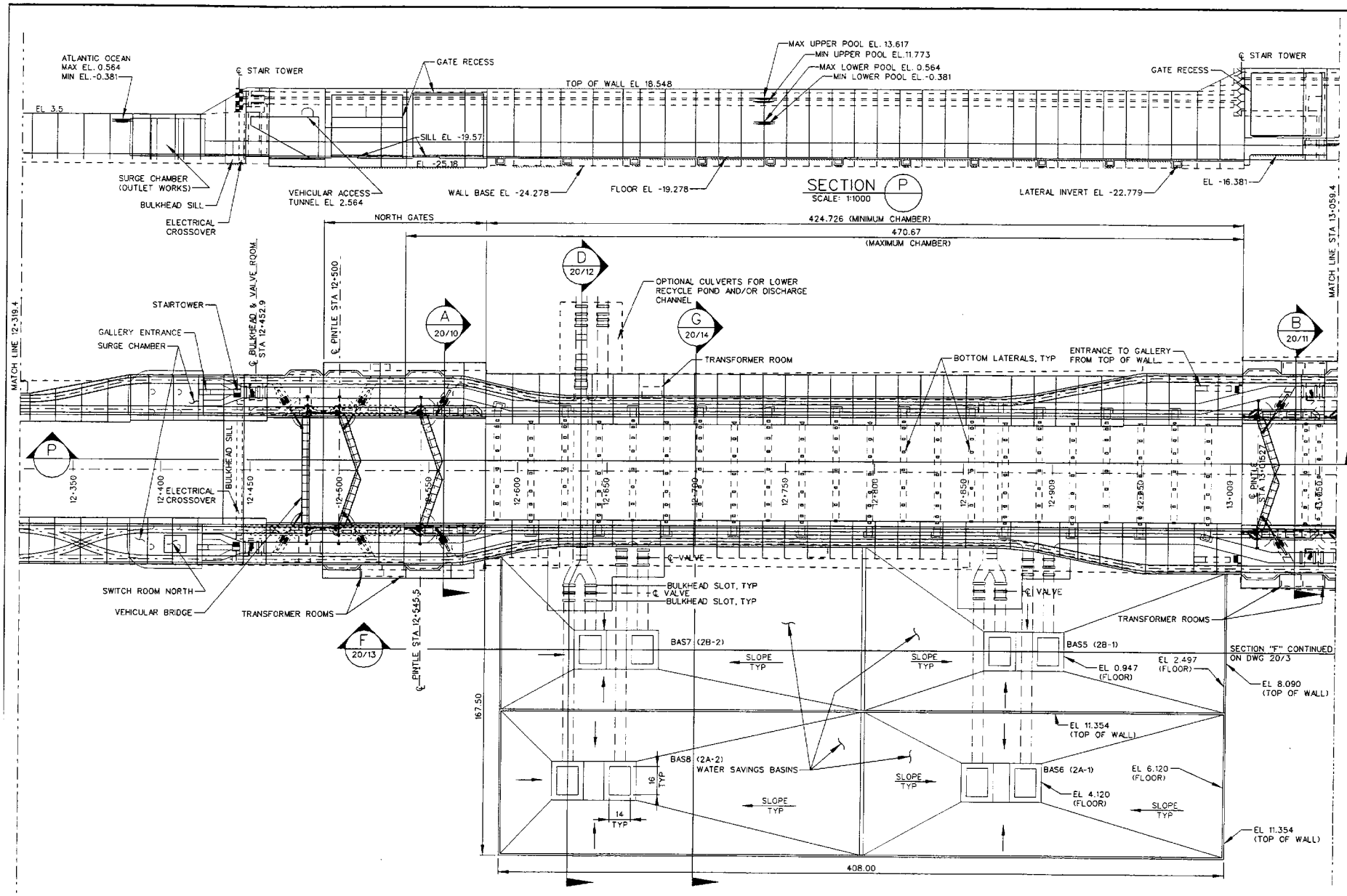
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
NORTH ENTRANCE WALL
PLAN AND ELEVATION

Drawing Number: ACP-R-20/1



PLAN - LOWER LOCK CHAMBER
SCALE: 1:1000

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

0 10 20 40
SCALE: 1:1000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: W.A. HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jtankosh
Date: 28-MAR-2003 12:53
Plot Scale: 2.0000001.000000
Pen Table:
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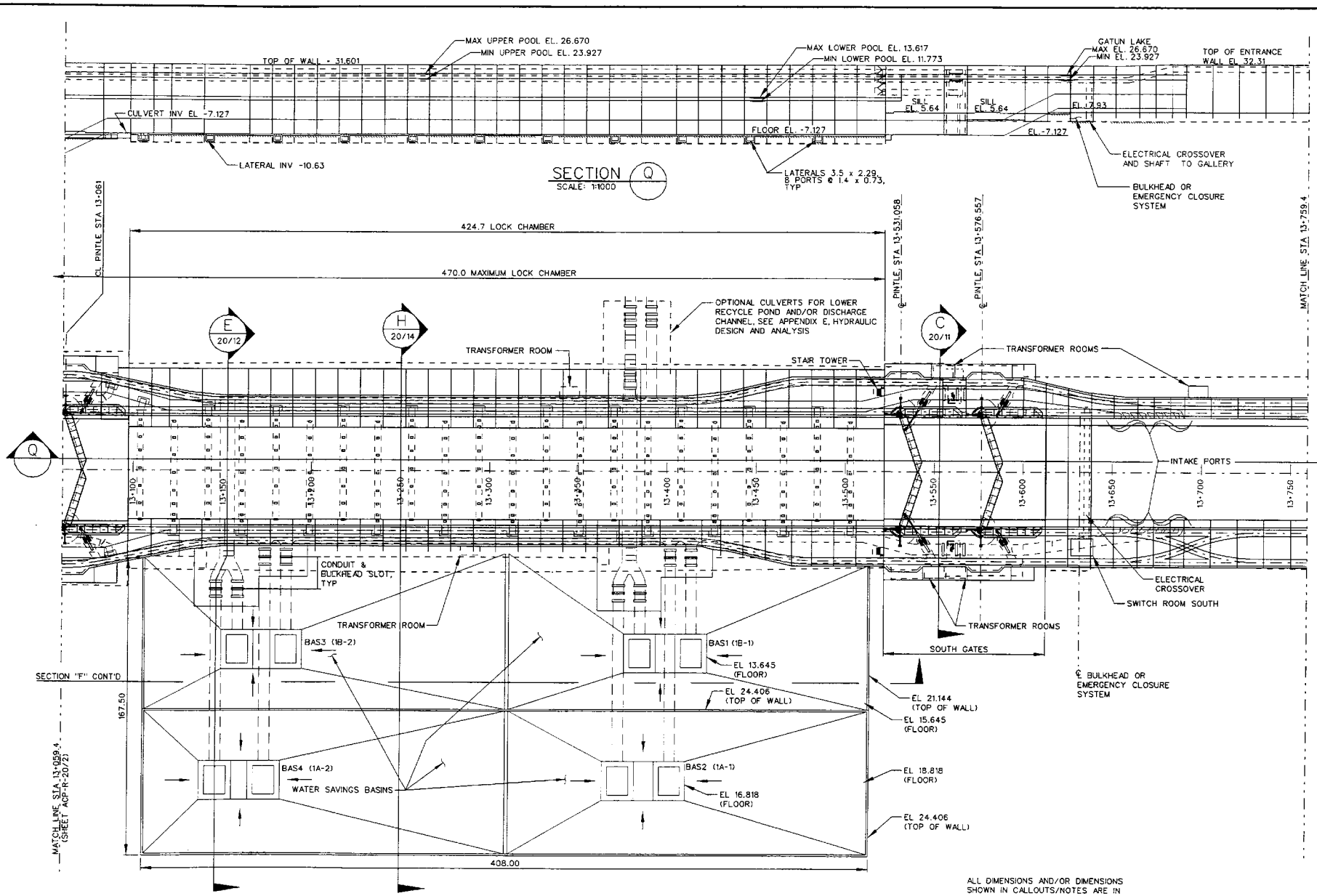
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
ALTERNATIVE #1 - BOTTOM INTERLACED LATERALS
PLAN AND ELEVATION

Drawing Number: ACP-R-20/2



PLAN - UPPER LOCK CHAMBER
SCALE: 1:1000

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet X of X

Design by: W.A.HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: ilankash
Date: 28-MAR-2003 12:54
Plot Scale: 2.0000001.000000
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Color Table

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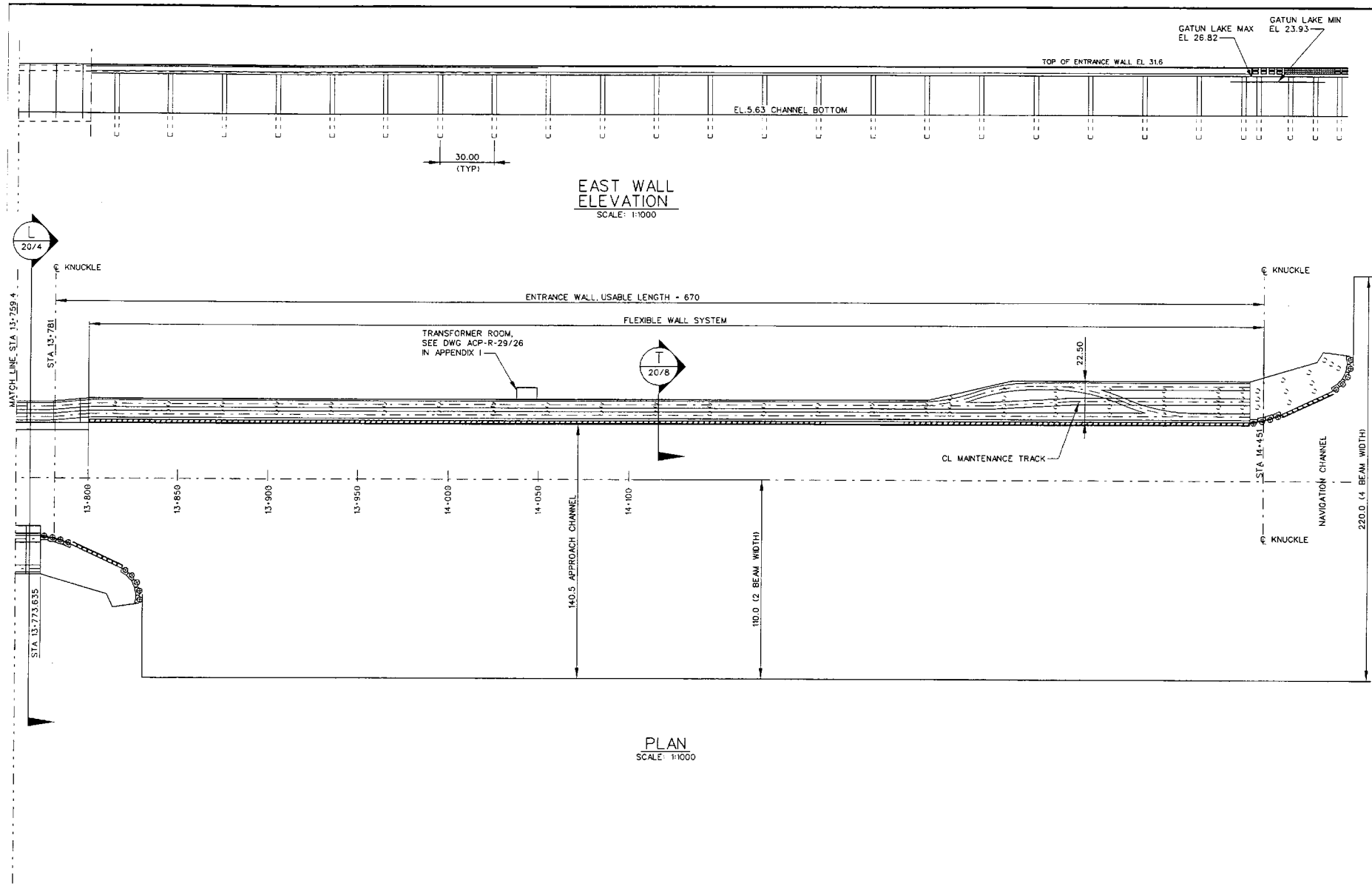
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK, FILLING SYSTEM #1
LOCK CHAMBER AND WATER SAVING BASINS
PLAN AND ELEVATION

Drawing Number: ACP-R-20/3



ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet X of X

Design by: W.A. HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: rlaskosh
Date: 28-MAR-2003 15:22
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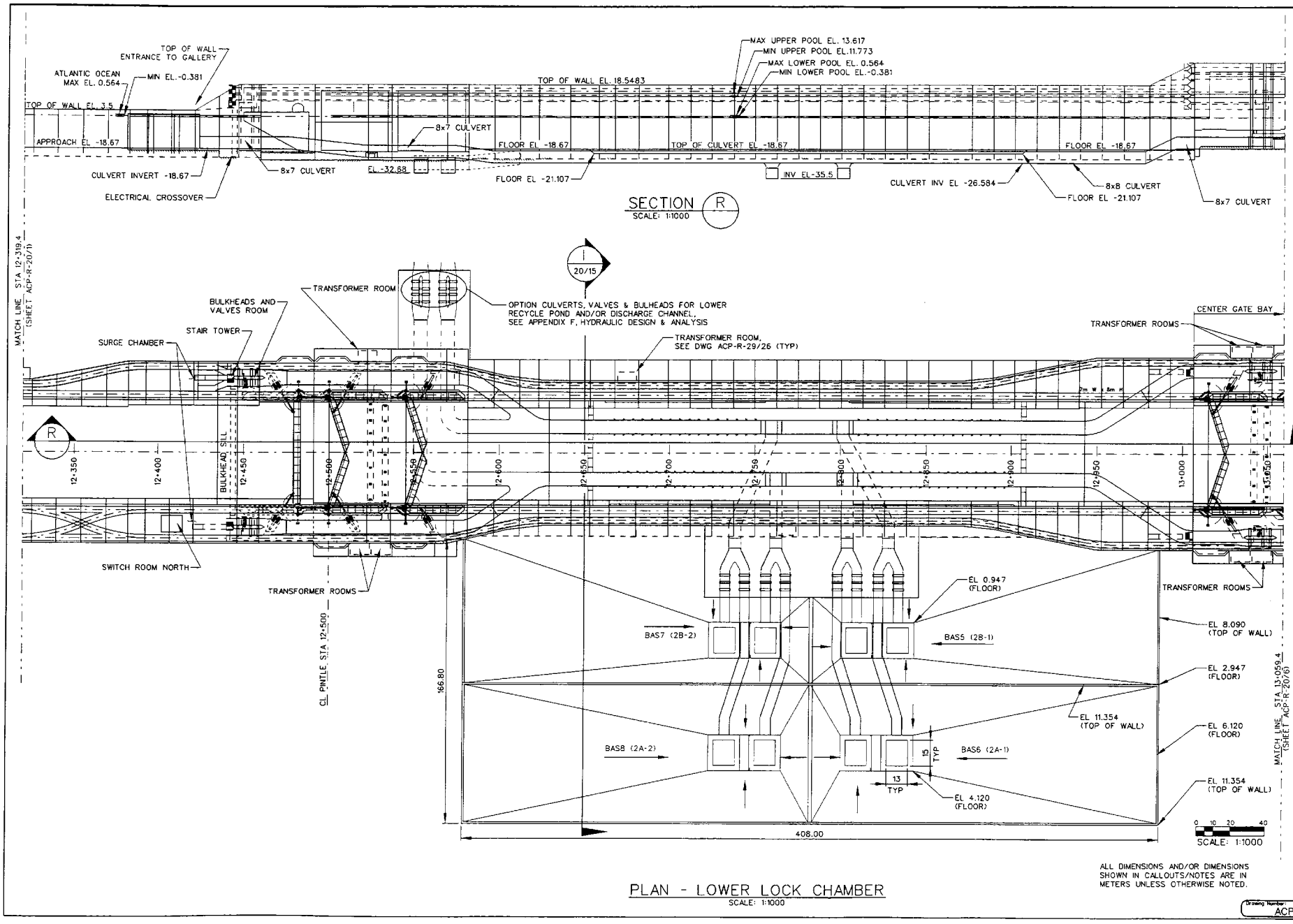
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
SOUTH ENTRANCE WALL
PLAN AND ELEVATION

Drawing Number: ACP-R-20/4



TOP OF WALL ENTRANCE TO GALLERY
ATLANTIC OCEAN MAX EL. 0.564
MIN EL.-0.381
TOP OF WALL EL. 3.5
APPROACH EL -18.67
CULVERT INVERT -18.67
ELECTRICAL CROSSOVER
8x7 CULVERT
EL.-32.68
FLOOR EL -21.107
TOP OF WALL EL. 18.5483
MAX UPPER POOL EL. 13.617
MIN UPPER POOL EL.11.773
MAX LOWER POOL EL. 0.564
MIN LOWER POOL EL.-0.381
FLOOR EL -18.67
TOP OF CULVERT EL -18.67
INV EL-35.5
CULVERT INV EL -26.584
8x8 CULVERT
FLOOR EL -21.107
8x7 CULVERT
SECTION R
SCALE: 1:1000
MATCH LINE STA 12+319.4 (SHEET ACP-R-20/1)
20/15
TRANSFORMER ROOM
BULKHEADS AND VALVES ROOM
STAIR TOWER
SURGE CHAMBER
OPTION CULVERTS, VALVES & BULHEADS FOR LOWER RECYCLE POND AND/OR DISCHARGE CHANNEL, SEE APPENDIX F, HYDRAULIC DESIGN & ANALYSIS
TRANSFORMER ROOM, SEE DWG ACP-R-29/26 (TYP)
CENTER GATE BAY
TRANSFORMER ROOMS
BULKHEAD SILL
12+350
12+400
12+450
12+500
12+550
12+600
12+650
12+700
12+750
12+800
12+850
12+900
12+950
13+000
13+050
SWITCH ROOM NORTH
TRANSFORMER ROOMS
CL PINTLE STA 12+500
166.80
EL 0.947 (FLOOR)
BAS7 (2B-2)
BAS5 (2B-1)
EL 8.090 (TOP OF WALL)
EL 2.947 (FLOOR)
EL 11.354 (TOP OF WALL)
EL 6.120 (FLOOR)
BAS8 (2A-2)
BAS6 (2A-1)
15 TYP
13 TYP
EL 4.120 (FLOOR)
EL 11.354 (TOP OF WALL)
MATCH LINE STA 13+059.4 (SHEET ACP-R-20/6)
408.00
0 10 20 40
SCALE: 1:1000
ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.
PLAN - LOWER LOCK CHAMBER
SCALE: 1:1000
US Army Corps of Engineers
Pittsburgh District
Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X
Design by: W.A. HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X
ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jlankesh
Date: 28-MAR-2003 12:54
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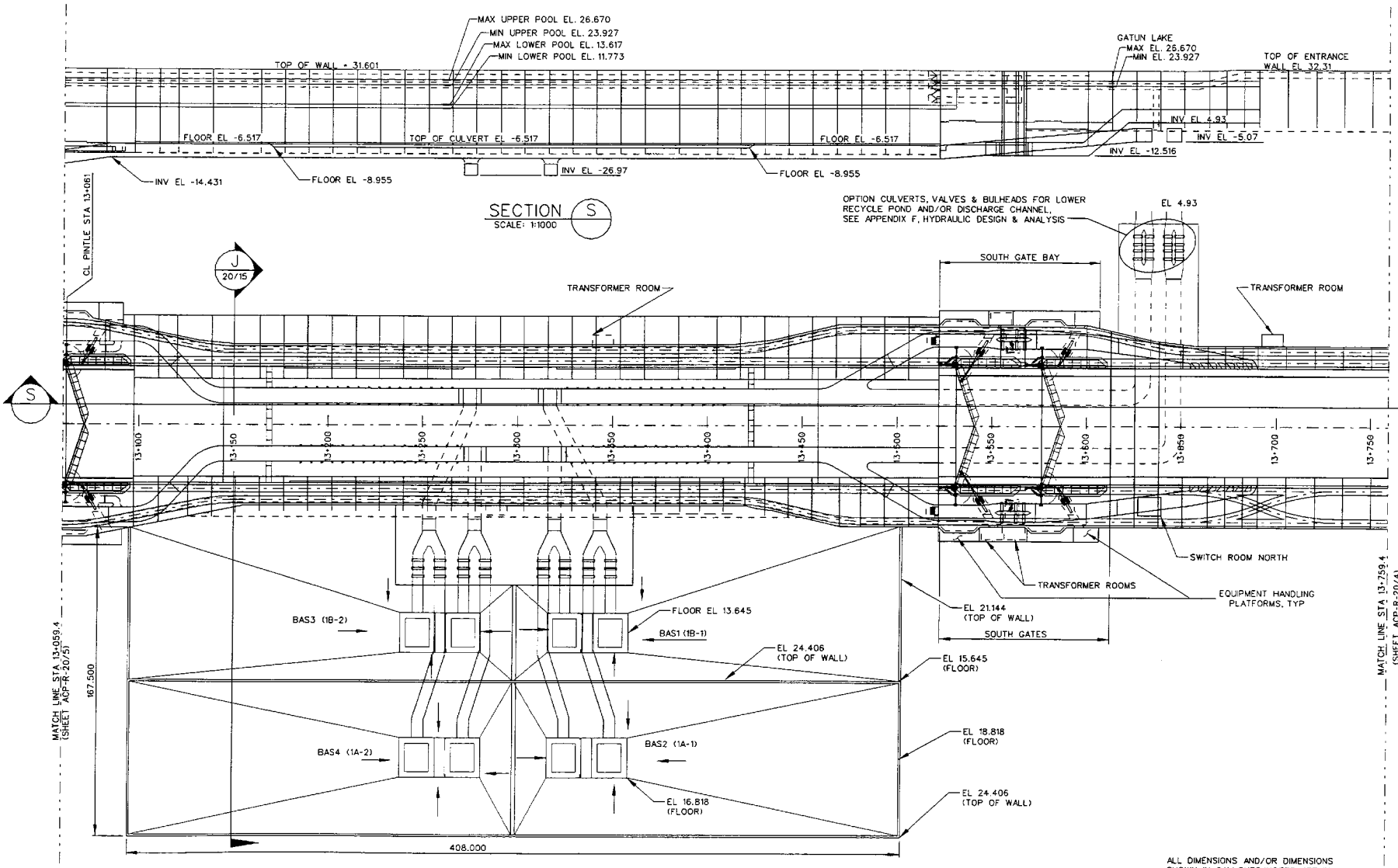
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK, FILLING SYSTEM #2
LOCK CHAMBER AND WATER SAVING BASINS
PLAN AND ELEVATION
Drawing Number: ACP-R-20/5



PLAN - UPPER LOCK CHAMBER
SCALE: 1:1000

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: W.A.HARKNESS
Dwn by: JET
Chk by: RAA
Submission Date: MAR 2003
Revision Date: X
FB NO.:

ACP

User: jbeaven
Date: 28-MAR-2003 12:54
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Color: Table

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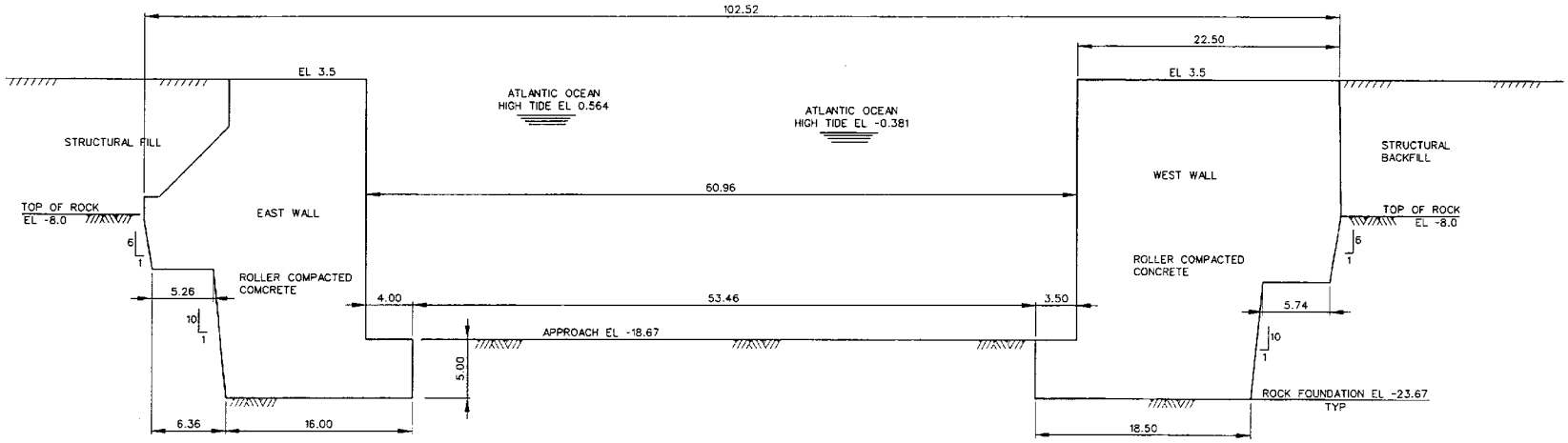
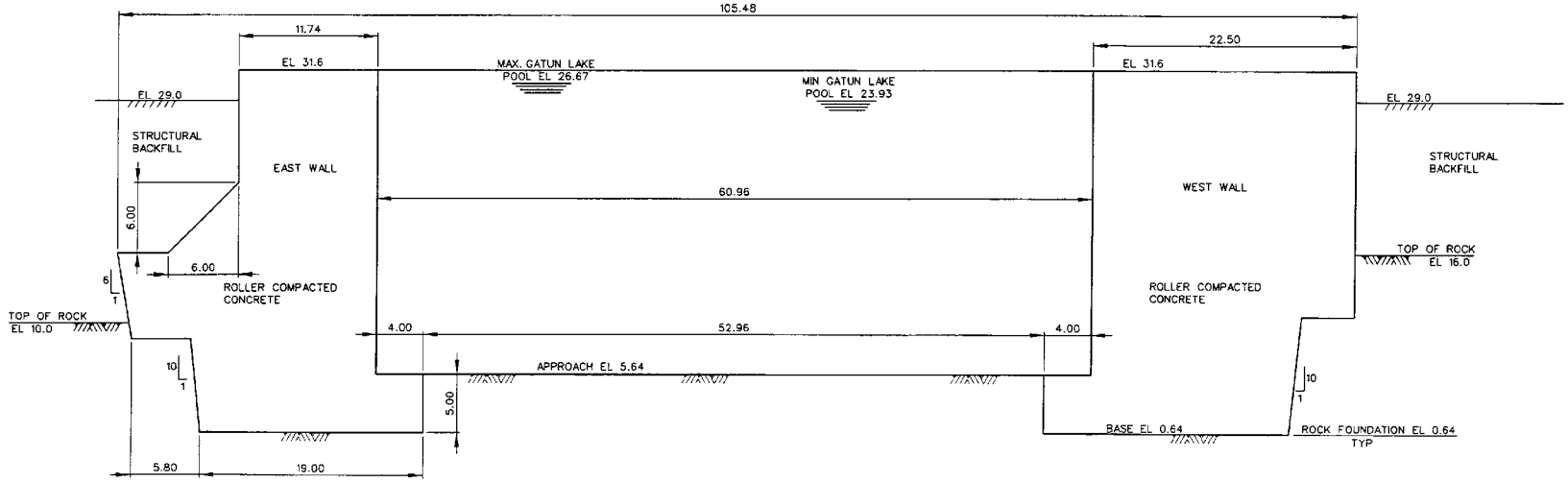
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK, FILLING SYSTEM #2
LOCK CHAMBER AND WATER SAVING BASINS
PLAN AND ELEVATION

Drawing Number: ACP-R-20/6



SECTION K
SCALE: 1:200
STA 12+300
20/1



SECTION L
SCALE: 1:200
STA 13+764
20/4

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Design by: A. HARKNESS
Cad By: R.AA
Sim By: JET
Submission Date: MAR 2003
Review Date:
IFB NO.:
X

ACP

User: (Rhoads)
Date: 28-MAR-2003 13:54
Plot Scale: 2.000000:1.000000
Plot Table:
Color Table:

Symbol	Description	Date	Appr.
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X			X

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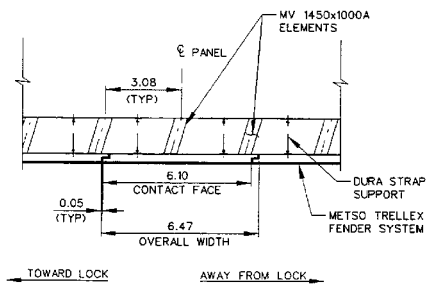
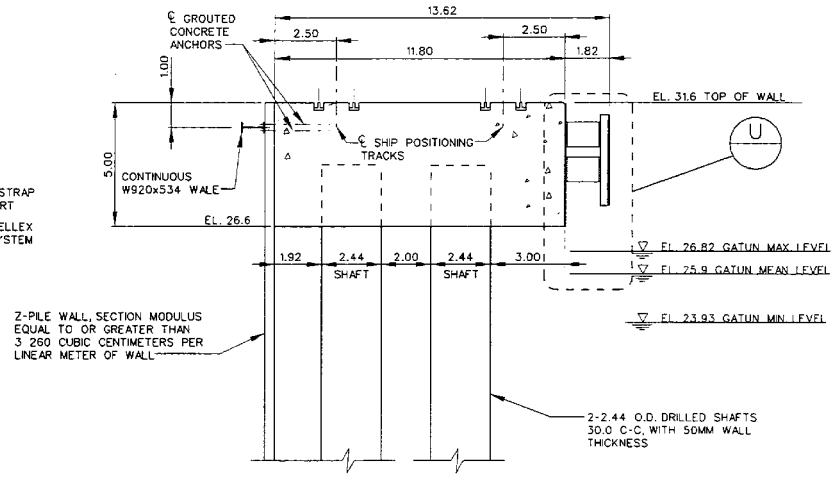
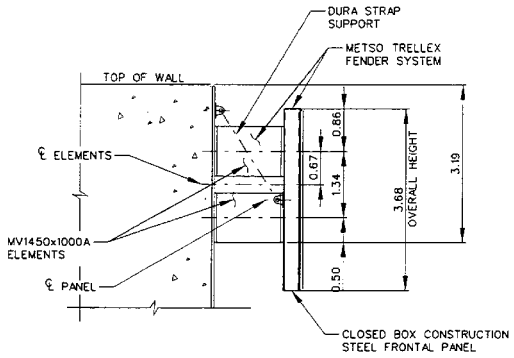
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
ENTRANCE WALLS
ATLANTIC & GATUN SECTIONS

Drawing Number:
ACP-R-20/7

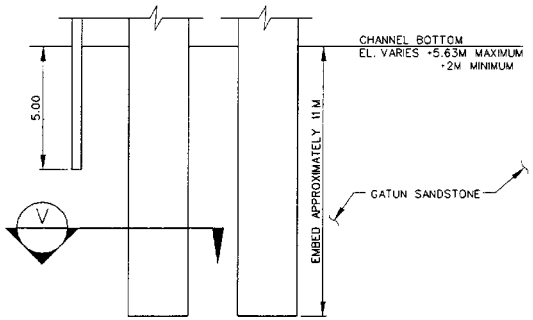


PARTIAL PLAN
SCALE: 1:100

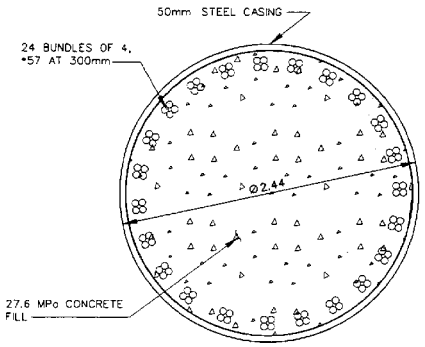




FENDER SYSTEM SECTION U
SCALE 1:50



GATUN ENTRANCE WALL SECTION T 20/4
SCALE: 1:100



DRILLED SHAFT DETAIL V
SCALE: 1:5

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: T. SULLIVAN
Drawn by: B.HUSTON
Ckd by: B.PATEY
Submission Date: MAR 2003
Revision Date:
P/S NO.: X

ACP
AUTOMATED BUILDING ENGINEERING

User: jbobash
Date: 28-MAR-2003 12:54
Plot Scale: 2.000000:1.000000
Plot Style: Monochrome
Color Table

Symbol	Description	Date	Appr.
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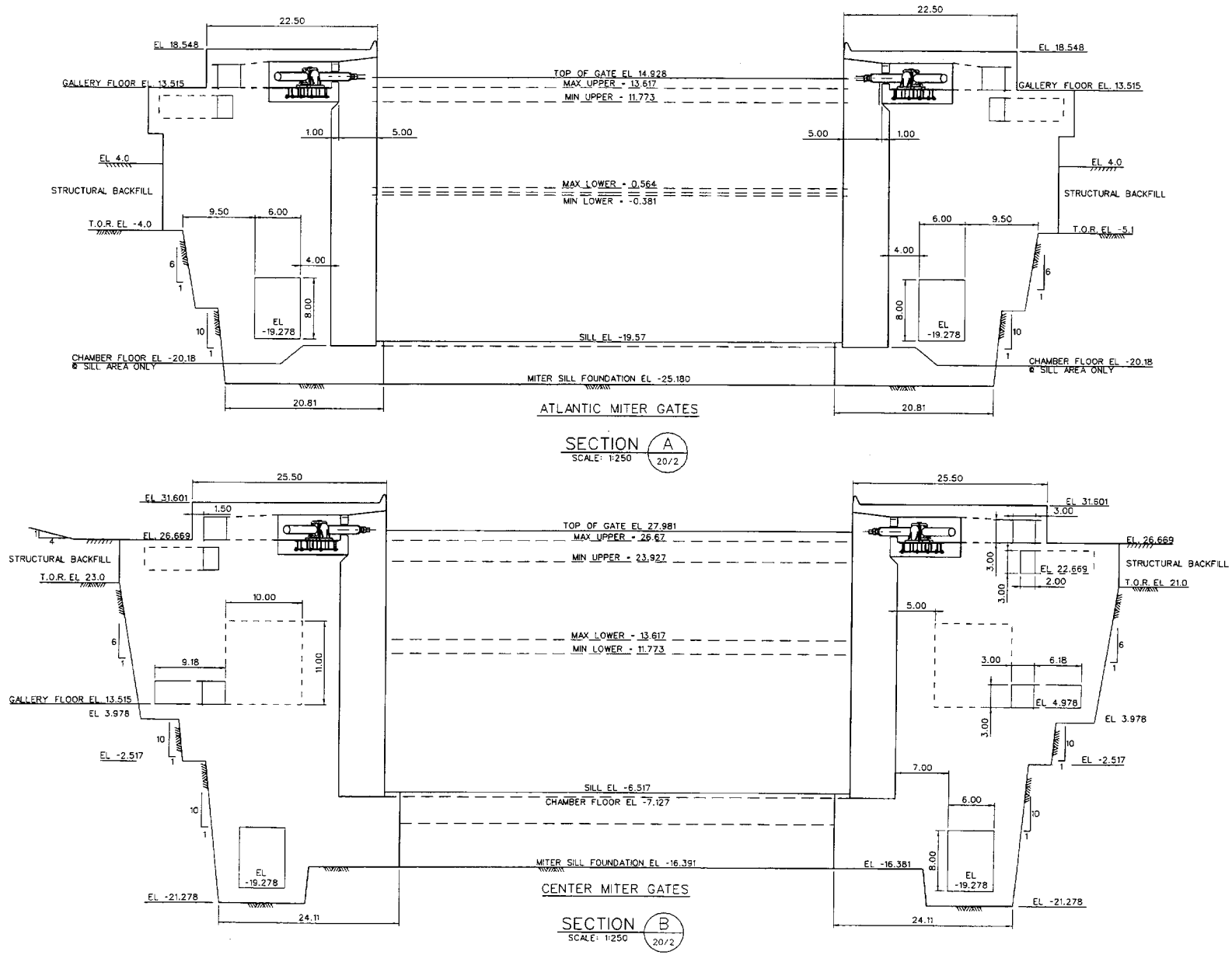
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
SOUTH ENTRANCE WALL
SECTIONS & DETAILS

Drawing Number: ACP-R-20/8



US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Design by: R ALLWES
Dwn by: JET
Ckd by: AH
Submission Date: MAR 2003
Revision Date: X
FB NO.:

ACP
AUTHORIDAD DEL CANAL DE PANAMA

User: jhanesh
Date: 28-MAR-2003 12:54
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
X	X	X	X

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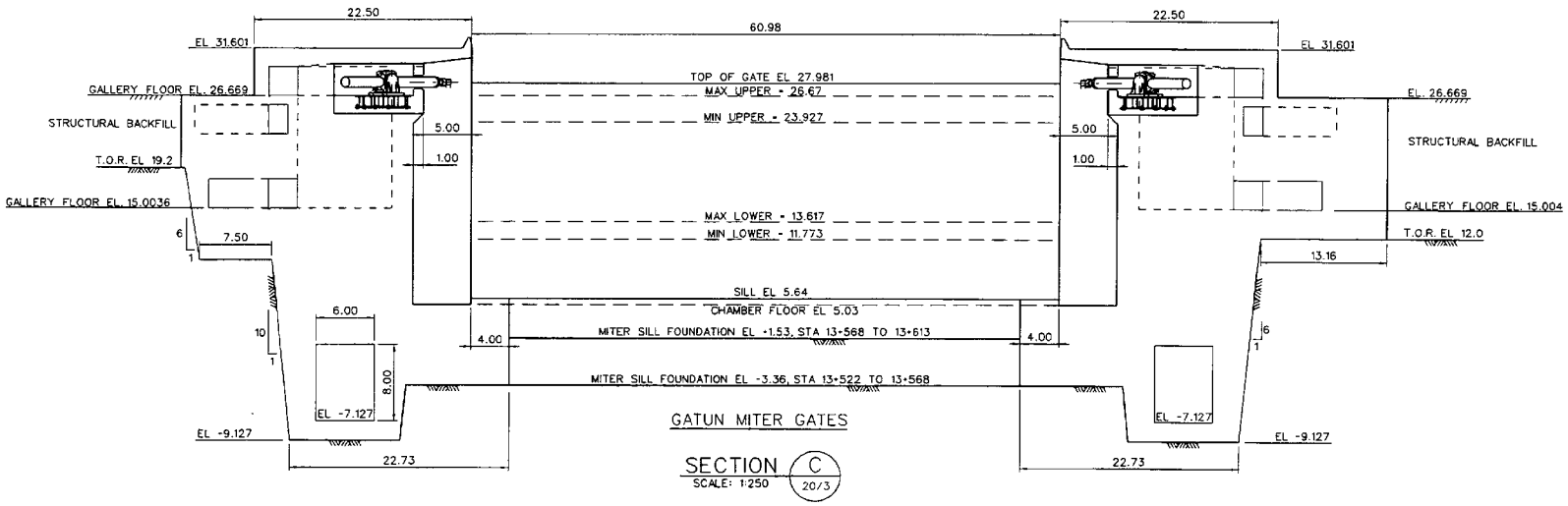
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATE MONOLITHS
SECTIONS A & B

Drawing Number: ACP-R-20/10



GATUN MITER GATES

SECTION C 20/3
SCALE: 1:250

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Design by: R ALLWES
Dwn by: JET
Ckd by: AH
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA

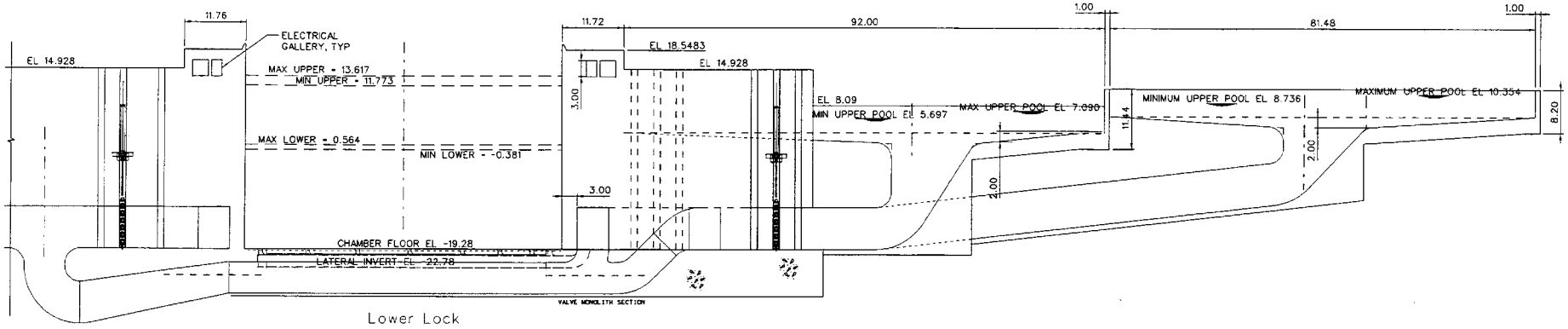
User: jtankosh
Date: 28-MAR-2003 12:55
Plot Scale: 2.000000-1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
X	X	X	X

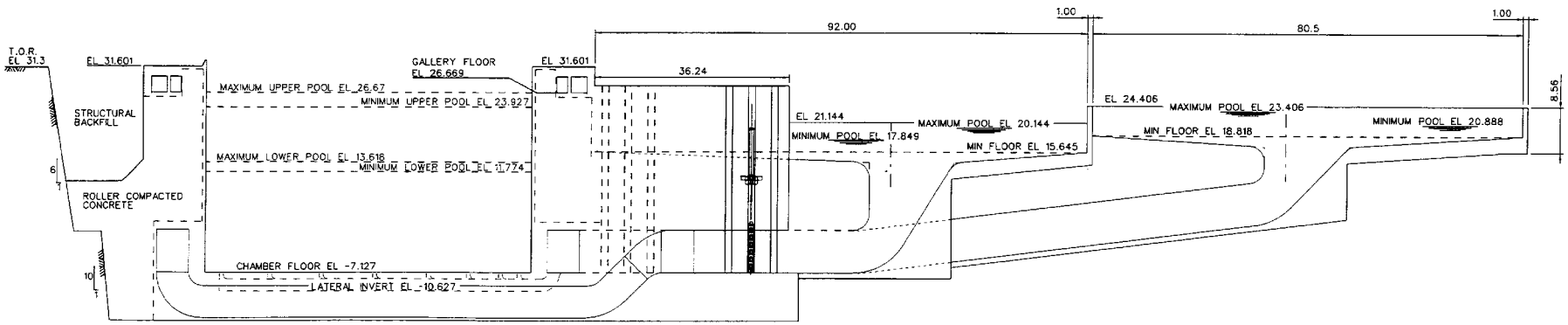
F:\ACP\sheet\Double lift\acp-r-2011.s01

PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATE MONOLITHS
SECTION C

Drawing Number: ACP-R-20/11



SECTION D 20/2
SCALE: 1:400
STA 12+629



SECTION E 20/3
SCALE: 1:400
STA 13+150

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
IFB NO.:
Sheet X of X

Design by: W.A. HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jhenkosh
Date: 28-MAR-2003 12:55
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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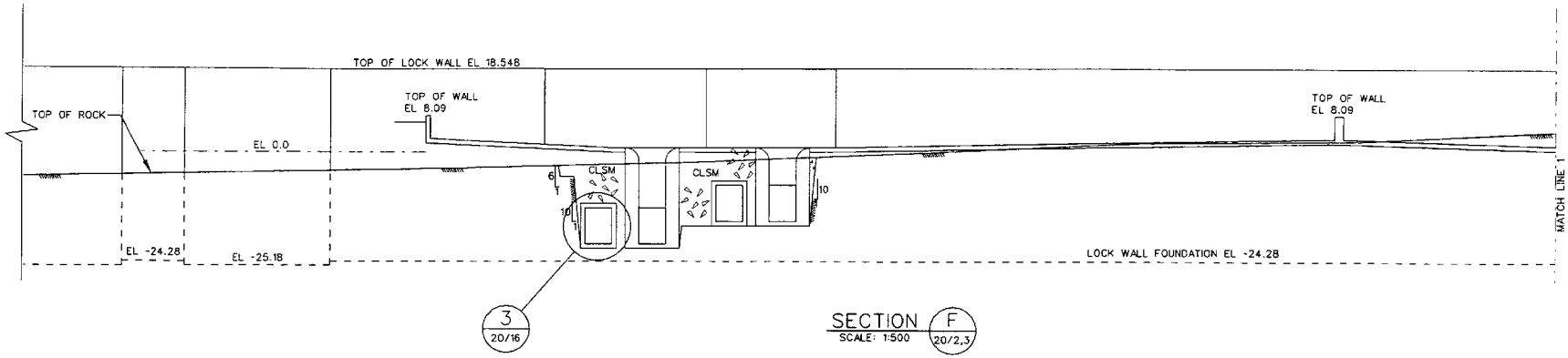
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK AND WATER SAVING BASINS
SECTIONS

Drawing Number: ACP-R-20/12



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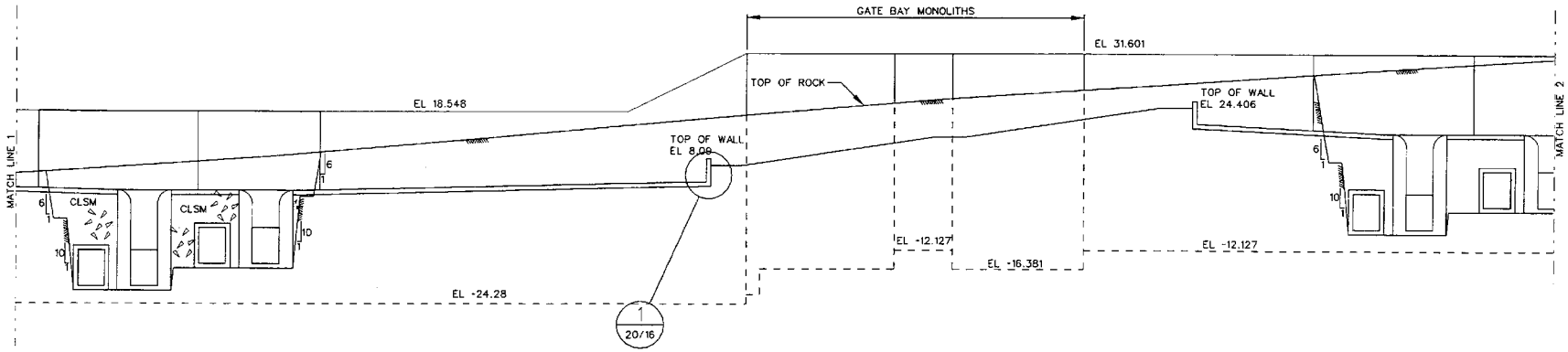

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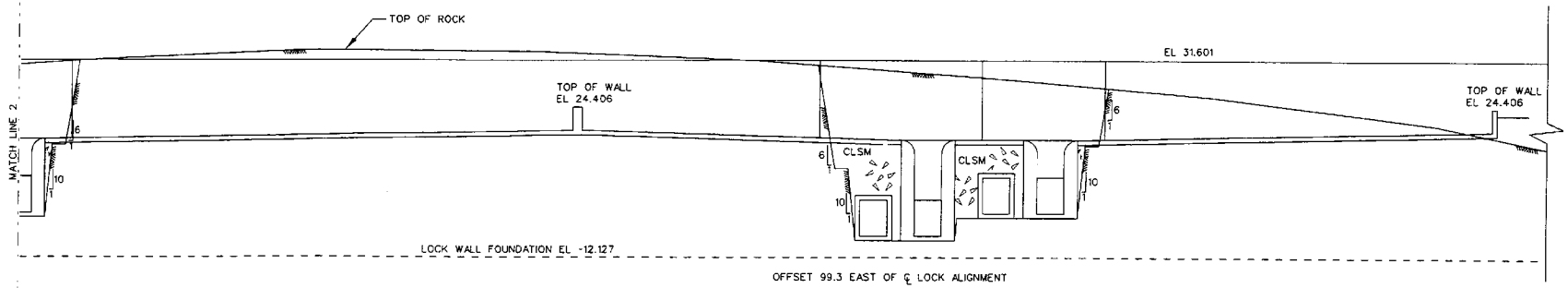

SECTION F
SCALE: 1:500 (20/2,3)

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
PB NO.:
Sheet X of X

Design by: W.A. HARKNESS
Dwn by: JET
Chk by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTOBIRDIO DELL.CNVALDE.PANAMA
User: ifdesgn
Date: 28-MAR-2003 12:35
Plot Scale: 2.000000:1.000000
Plot Device: Plotter
Color Table

Symbol	Description	Date	Appr.
X		X	X

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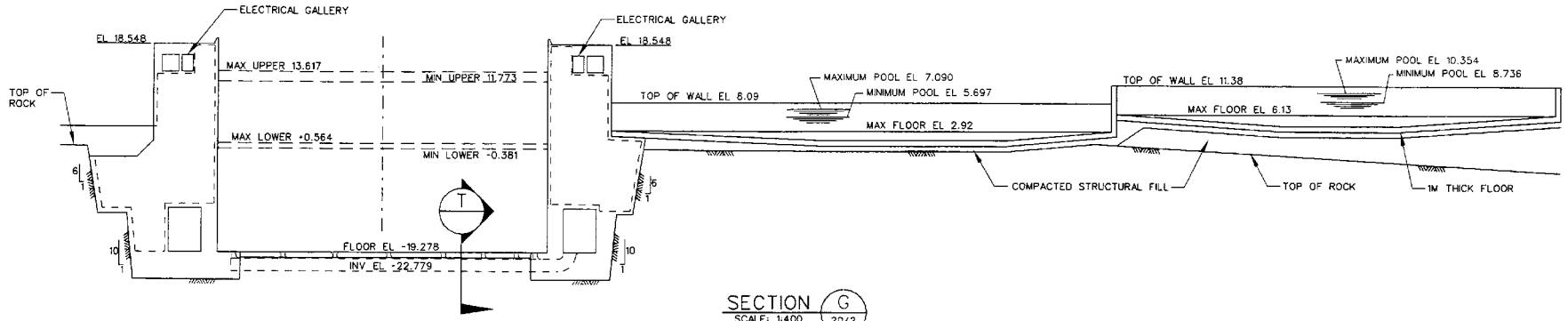
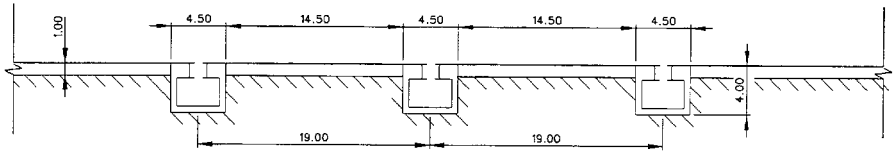
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
WATER SAVING BASINS
SECTIONS

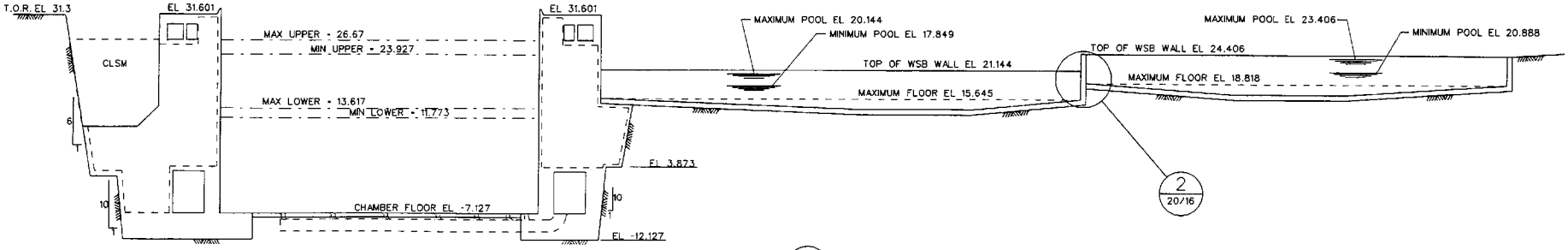
Drawing Number: ACP-R-20/13



SECTION G
SCALE: 1:400
STA 12+700
20/2



SECTION T



SECTION H
SCALE: 1:400
STA 13+250
20/3

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Keyed by: W.A. HARKNESS
Dwn by: JFT
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
A CUTOMBAD DEL CANAL DE PANAMA

Symbol | Description | Date | Appr.
X | | | X
X | | | X

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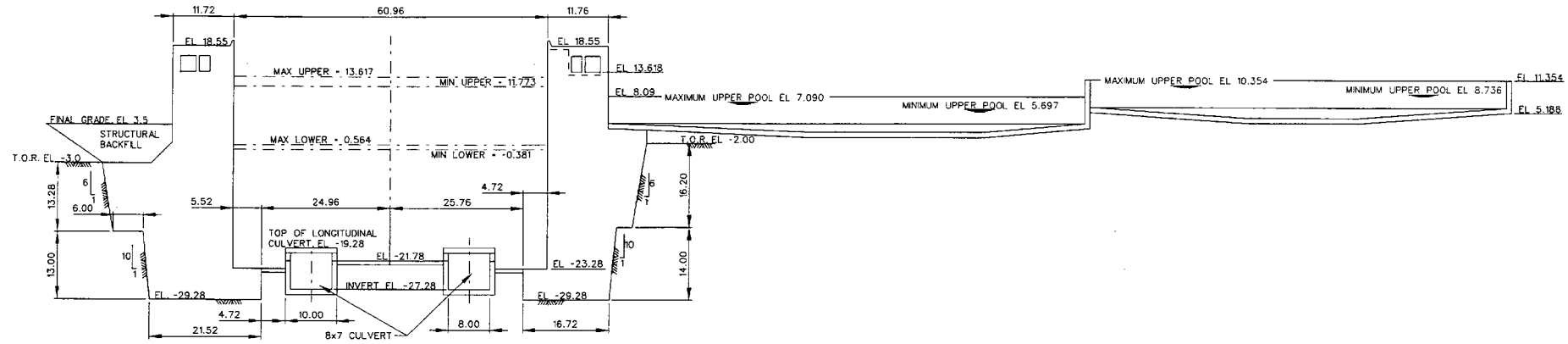
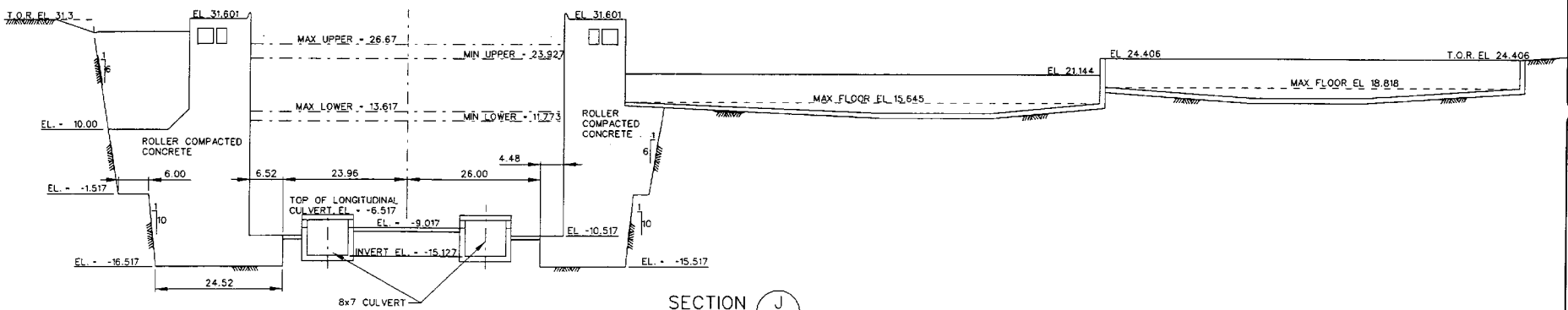
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK AND WATER SAVINGS BASINS
SECTIONS

Drawing Number: ACP-R-20/14



SECTION I
SCALE: 1:500
STA 12+650
20/5



SECTION J
SCALE: 1:500
STA 13+150
20/6

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Design by: W.A. HARKNESS
Cad by: RAA
Submission Date: MAR 2003
Revision Date: X
Item No.: JET
P.B. NO.:

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: Rankaa
Date: 28-MAR-2003 12:55
Plot Scale: 2.000000:1.000000
Plot Style: Color Table

Symbol	Description	Date	Appr.
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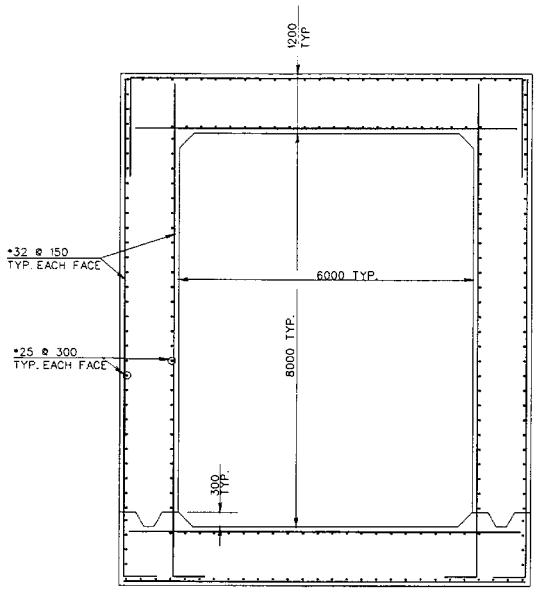
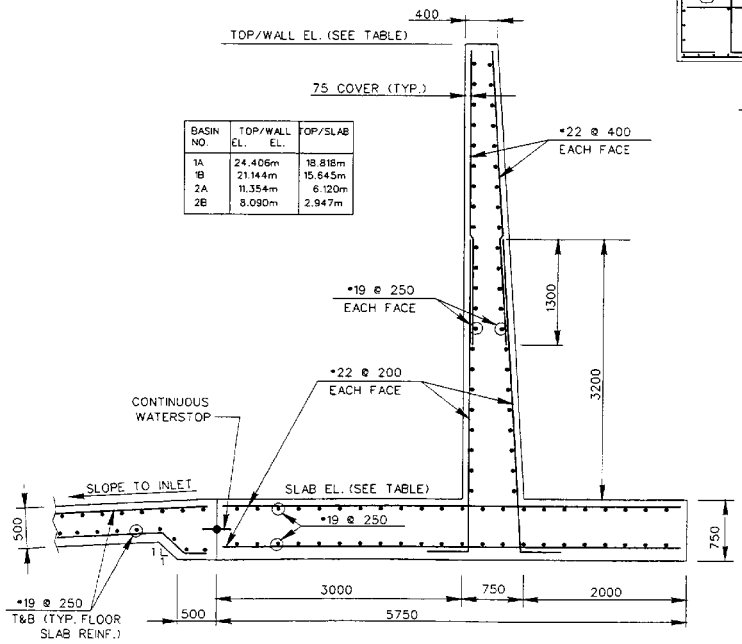
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK - ALTERNATIVE 2
LOCK AND WATER SAVING BASINS
SECTIONS

Drawing Number:
ACP-R-20/15

USE 25 MPa CONCRETE
USE A20 MPa REINFORCING BARS

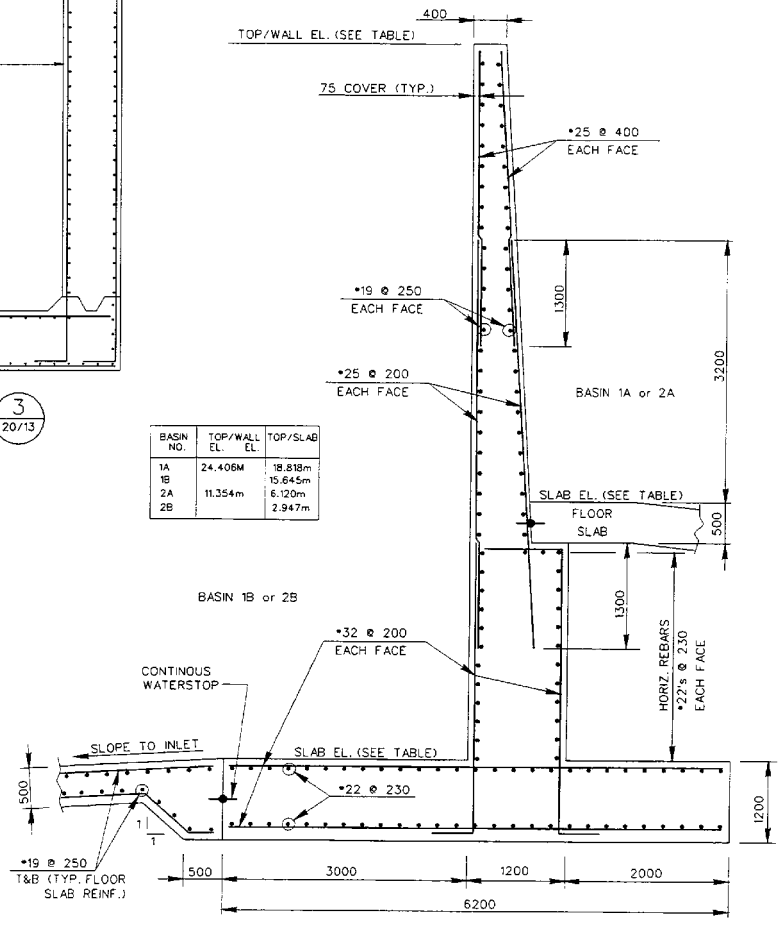


CONDUIT SECTION 3/20/13
SCALE: 1:50



BASIN NO.	TOP/WALL EL. EL.	TOP/SLAB
1A	24.406m	18.818m
1B	21.144m	15.645m
2A	11.354m	6.120m
2B	8.090m	2.947m

EXTERIOR WALL SECTION 1/20/13
SCALE: 1:30



BASIN NO.	TOP/WALL EL. EL.	TOP/SLAB
1A	24.406M	18.818m
1B		15.645m
2A	11.354m	6.120m
2B		2.947m

MIDDLE WALL SECTION 2/20/14
SCALE: 1:30

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Design by: K. HULL, P.E.
Dwn by: KH/JET
Ckd by: WAH
Submission Date: MAR 2003
Revision Date: X
PB NO.:
Sheet X of X

ACP
ATLANTIC DIVISION, NAVAL DEPARTMENT
User: jbeksah
Date: 28-MAR-2003 12:58
Plot Scale: Z:\000000-1000000
Pen Table: Color Table

Symbol	Description	Date	Appr.
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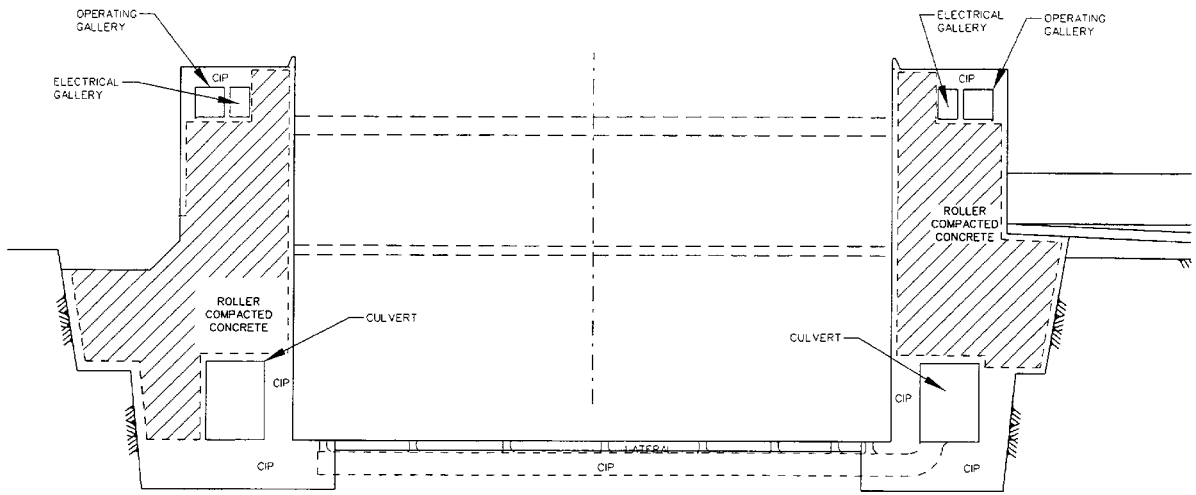
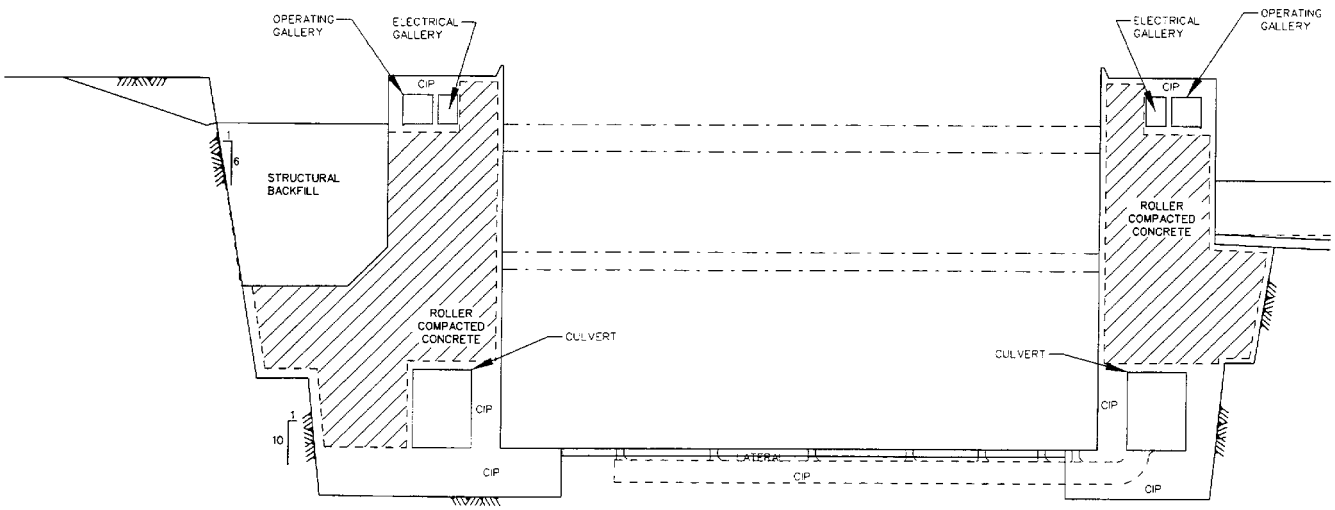
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
WATER SAVINGS BASINS WALL & CONDUIT SECTIONS & DETAILS

Drawing Number: ACP-R-20/16



TYPICAL CONCRETE PLACEMENT SECTION (G / 20/2)
SCALE: 1:250



TYPICAL CONCRETE PLACEMENT SECTION (H / 20/3)
SCALE: 1:250

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet X of X

Design by: R. ALLWES
Dwn by: JET/RAA
Ckd by: WAH
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jtankash
Date: 25-MAR-2003 12:58
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
X	X	X	X

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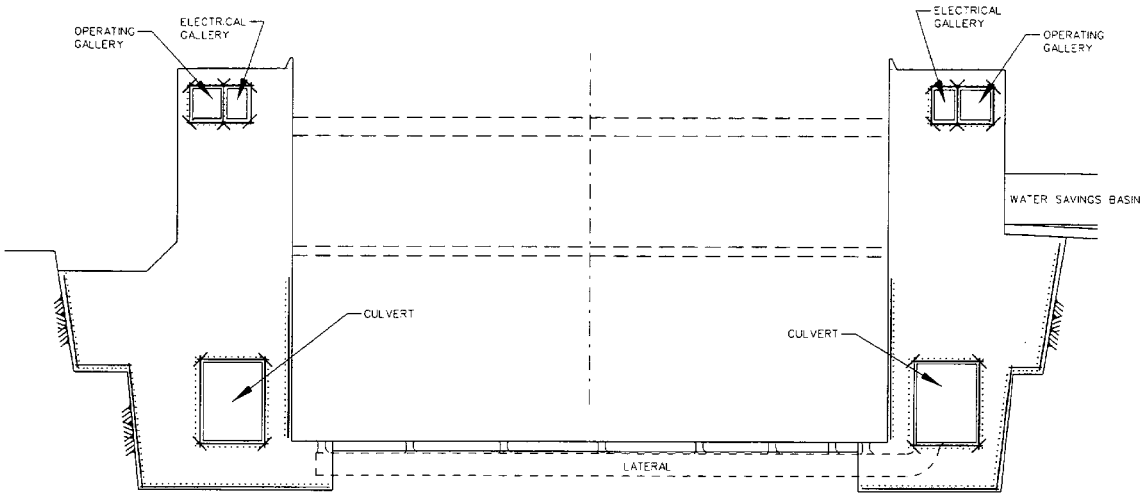
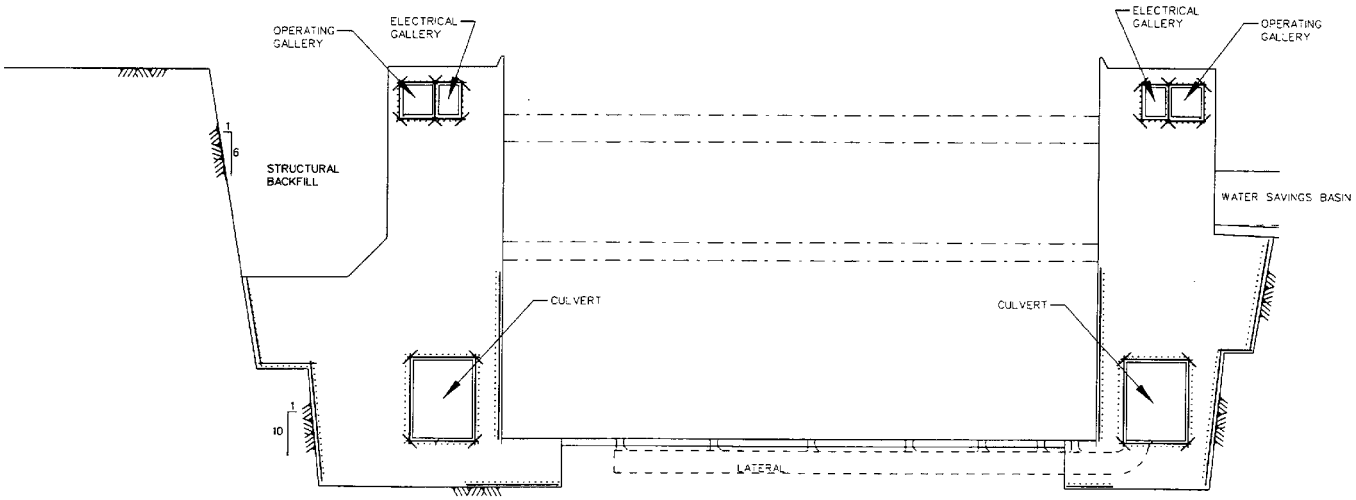
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
TYPICAL CONCRETE PLACEMENT AREAS
SECTIONS

Drawing Number: ACP-R-20/17



TYPICAL REINFORCING SECTION (G / 20/2)
SCALE: 1:250



TYPICAL REINFORCING SECTION (H / 20/3)
SCALE: 1:250

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
IFB NO.:
Sheet X of X

Design by: R. ALLWES
Dwn by: JET/MS
Ckd by: WAH
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jlenkesh
Date: 26-MAR-2003 12:58
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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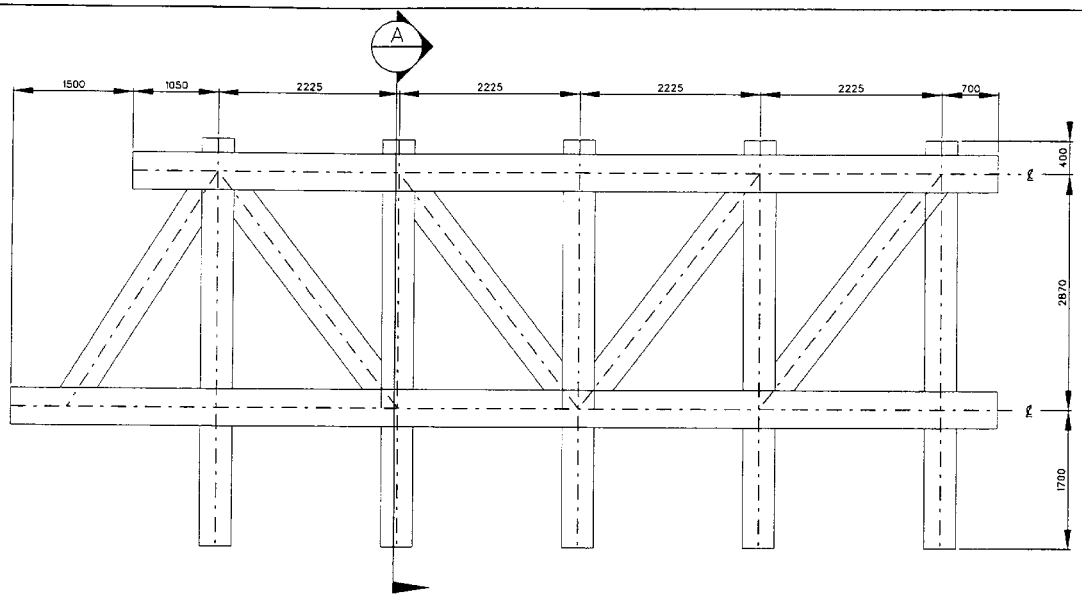
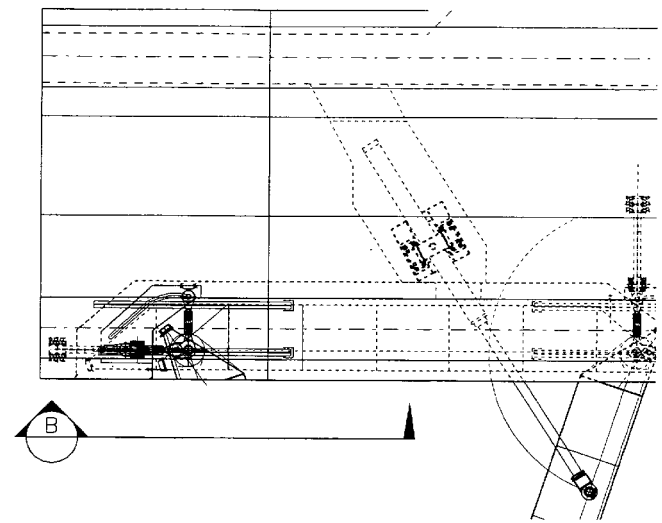
F:\ACP\sheet\Double lift\acp-r-2018.s01

PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
SHRINKAGE & TEMPERATURE REINFORCING SECTIONS

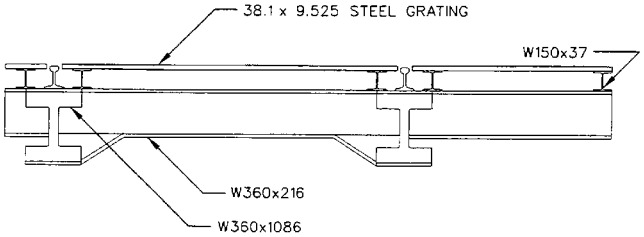
Drawing Number: ACP-R-20/18



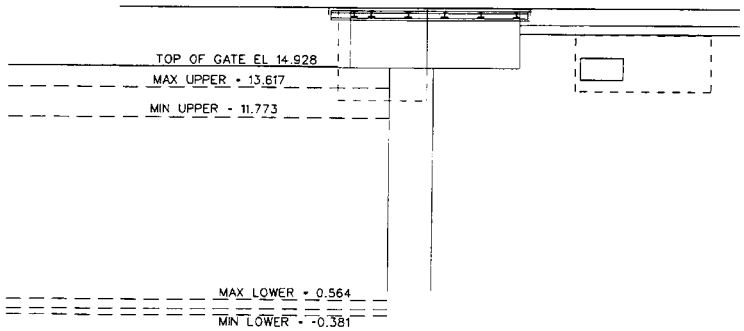
BRIDGE PLAN
SCALE: 1:30



GATE ANCHORAGE RECESS PLAN
N.T.S.



SECTION A
SCALE: 1:20



ELEVATION B
SCALE: 1:20

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet X of X

Design by: R. ALLWES
Drn by: RAA/JET
Ckd by: WAH
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jlanksch
Date: 28-MAR-2003 12:58
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table:

Symbol	Description	Date	Appr.
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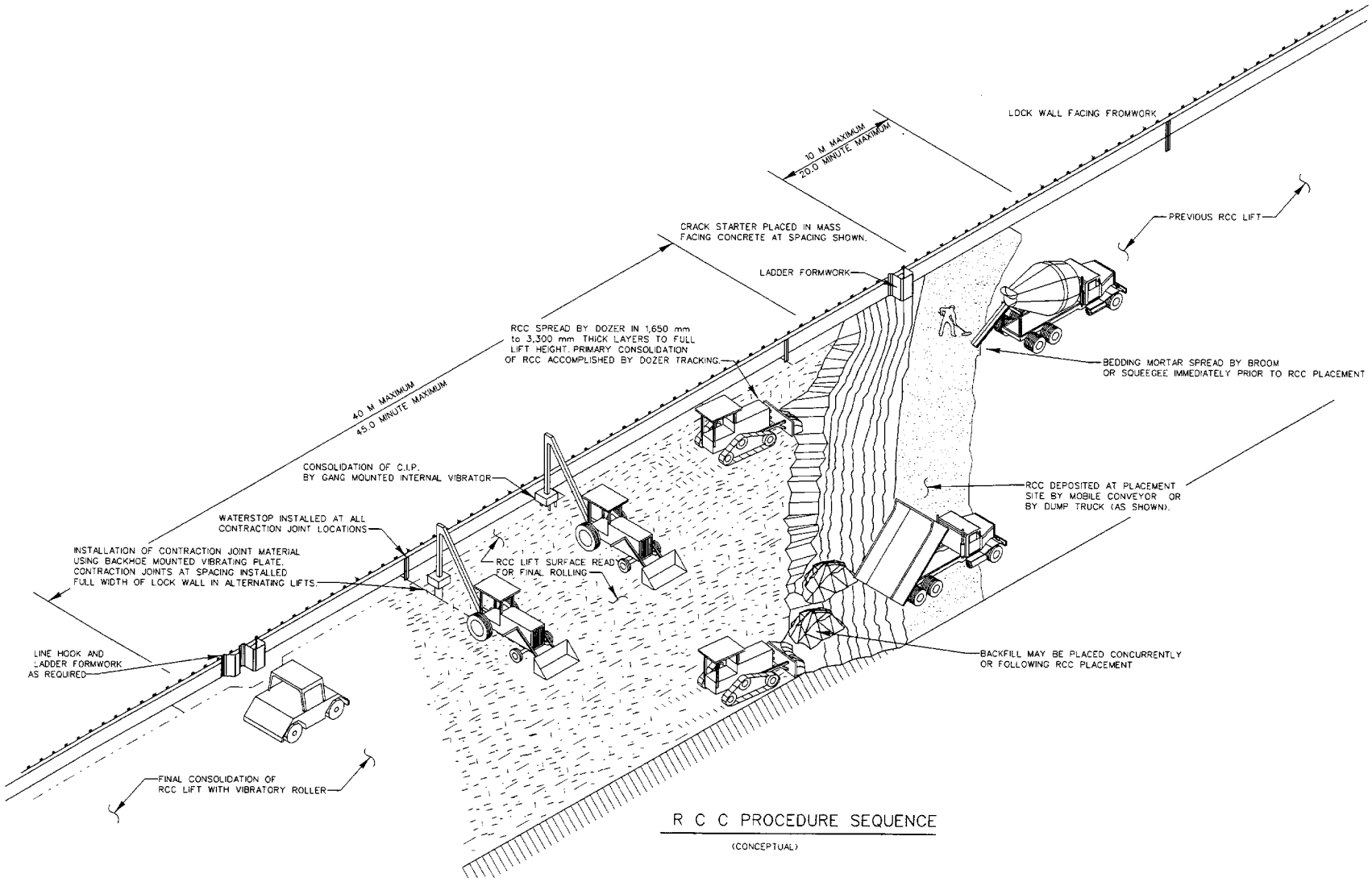
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
BRIDGE - GATE ANCHORAGE RECESS AREA
PLAN, SECTIONS & DETAILS

Drawing Number: ACP-R-20/19



R C C PROCEDURE SEQUENCE

(CONCEPTUAL)

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

IFB NO.:

Sheet X of X

Design by: W.A. HARKNESS

Chk by: JET

Ckd by: RAA

Submission Date: MAR 2003

Revision Date: X

ACP
AUTOCAD DEL CANAL DE PANAMA

User: jtankesh
Date: 28-MAR-2003 12:58
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table:

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PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
ROLLER COMPACTED CONCRETE
PLACEMENT PROCESS CONCEPT

Drawing Number: ACP-R-20/20

NOTES

1.) TEMPORAL LOAD - 0.23 M APPLIED IN ADDITION TO MAXIMUM NORMAL HEAD

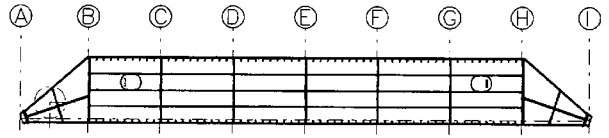
2.) SEISMIC LOADING: ∝ - 0.14g, (OBE) ∝ - 0.31g (MCE). GATES DESIGNED FOR 2/3 MCE. APPLIED TO GATE MASS AND USED FOR HYDRODYNAMIC WATER LOADING.

3.) 2.5M WIDE BRIDGE ON GATE TOP IS DESIGNED FOR 400KN LOADING. APPLIED AT MITER END.

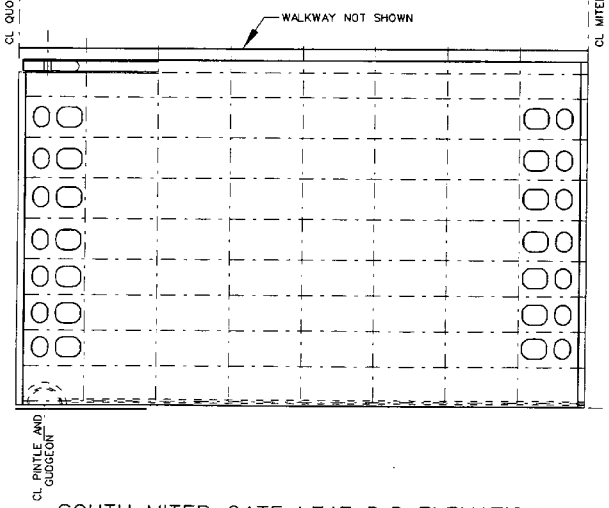
4.) GATES DESIGNED TO BE USED TO DEWATER LOCK CHAMBER, INTERMEDIATE POOL SET TO EL. 5.65

LEGEND

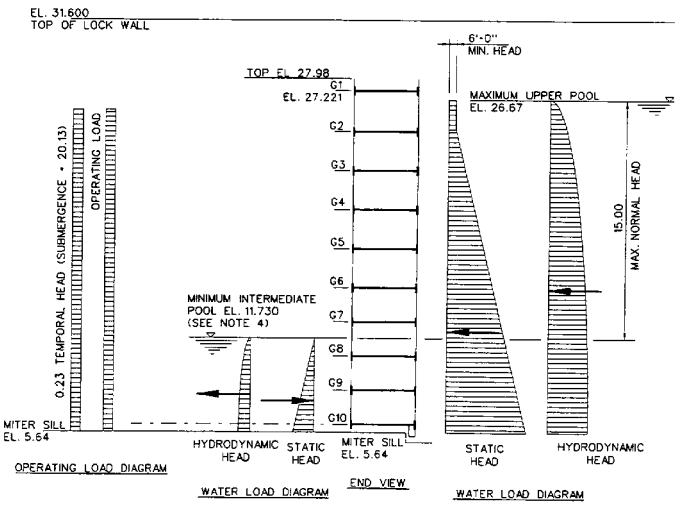
Ⓐ - DIAPHRAGM LETTERS, SET AT CL OF DIAPHRAGMS AND CONTACT POINTS
GXX - GIRDER NUMBERS, SET AT CL OF GIRDERS
⟵ - INDICATES DIRECTION OF LOADING



TYP. GIRDER PLAN



SOUTH MITER GATE LEAF D.S. ELEVATION



LOAD CASE 1

(GATUN LAKE TO INTERMEDIATE POOL)

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: A. HARKNESS, PE
Drn by: AH
Ckd by: RAA
Revision Number: X
Scale: NTS
Date: MAR 2003
Sheet X of X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jbowlan
Date: 11 Mar 2003 12:56
Plot Scale: 2.000000/1.000000
Pen Table:
Color Table:

Symbol	Description	Date	App.
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PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK GATES
SOUTH GATES - LOADING DIAGRAMS

Drawing Number: ACP-R-21/1

NOTES

1.) TEMPORAL LOAD = 0.23 M APPLIED IN ADDITION TO MAXIMUM NORMAL HEAD

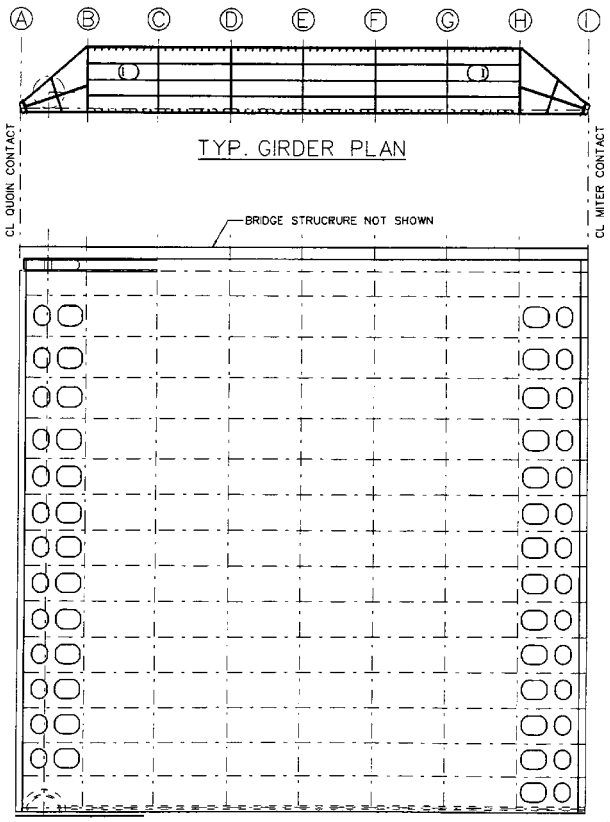
2.) SEISMIC LOADING: α = 0.14g (OBE), α = 0.31g (MCE). GATE DESIGNED FOR 2/3 MCE (0.21g) CRITICAL STRUCTURE. APPLIED TO GATE MASS AND USED FOR HYDRODYNAMIC WATER LOADING.

3.) 2.5M WIDE BRIDGE ON GATE TOP IS DESIGNED FOR 400KN LOADING APPLIED AT MITER END.

LEGEND

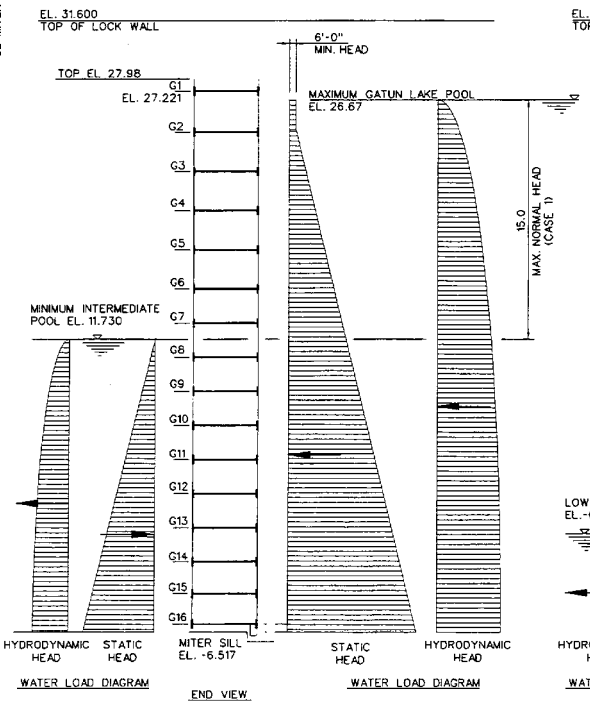
⊗ DIAPHRAGM LETTERS, SET AT CL OF DIAPHRAGMS AND CONTACT POINTS
GXX - GIRDER NUMBERS, SET AT CL OF GIRDERS

◄ INDICATES DIRECTION OF LOADING

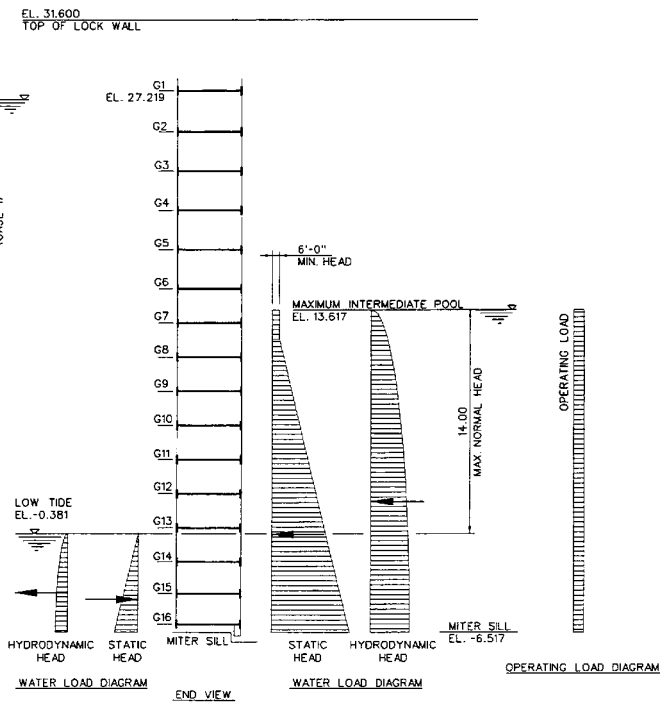


TYP. GIRDER PLAN

CENTER MITER GATE LEAF D.S. ELEVATION



LOAD CASE 1
(GATUN LAKE TO INTERMEDIATE POOL)



LOAD CASE 2
(INTERMEDIATE POOL TO ATLANTIC OCEAN)

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Design by: A. HARKNESS, PE
Dwn by: AH
Chk by: RAA
Submission Date: MAR 2003
Revision Date: X
PS NO.:
Sheet X of X

ACP
ATLANTIC COMPANY OF PANAMA, CANAL INC. PANAMA
User: rbaxter
Date: 28-MAR-2003 12:58
Plot Scale: 2.000000:1.000000
Plot Date:
Color Table:

Symbol	Description	Date	Appr.
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F:\ACP\sheet\Double lift\ACP-R-2102.s01

PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK GATES
CENTER GATES - LOADING DIAGRAMS

Drawing Number: ACP-R-21/2

NOTES

1.) IMPACT ALLOWANCE: 1000K SYMMETRIC LOAD, 1000K UNSYMMETRIC LOAD APPLIED TO ALL BEAMS ABOVE UPPER POOL.

2.) TEMPORAL LOAD = 0.23 M APPLIED IN ADDITION TO MAXIMUM NORMAL HEAD

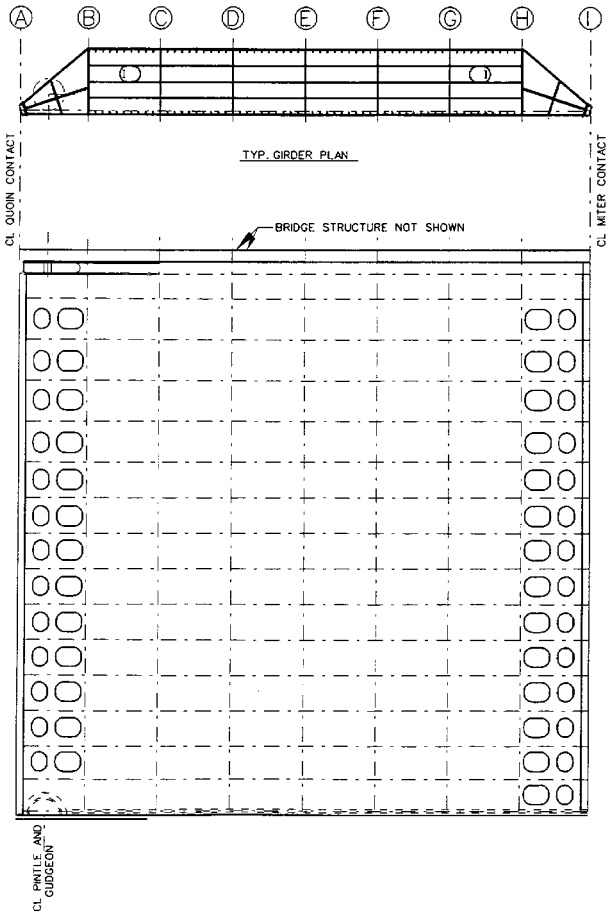
3.) SEISMIC LOADING: α = 0.14g (OBE), α = 0.31g (MCE). GATE DESUGNED AS A CRITICAL STRUCTURE W/ 2/3 MCE (0.21g). APPLIED TO GATE MASS AND USED FOR HYDRODYNAMIC WATER LOADING.

4.) 2.5M WIDE BRIDGE ON GATE TOP IS DESIGNED FOR 400KN LOADING APPLIED AT MITER END.

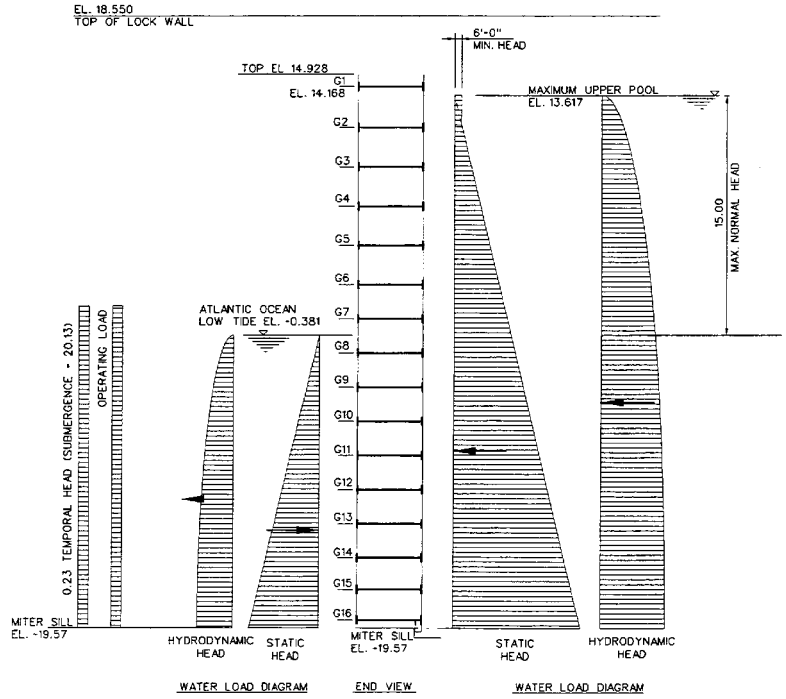
LEGEND

⊗ DIAPHRAGM LETTERS, SET AT CL OF DIAPHRAGMS AND CONTACT POINTS
GXX - GIRDER NUMBERS, SET AT CL OF GIRDERS

◄ INDICATES DIRECTION OF LOADING



NORTH MITER GATE LEAF D.S. ELEVATION



LOAD CASE 1

(INTERMEDIATE POOL TO ATLANTIC OCEAN)

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: A. HARKNESS, PE
Dwn by: AH
Ckd by: JET
Submission Date: MAR 2003
Revision Date: X
PB NO.:

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jbonash
Date: 26-MAR-2003 12:56
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Color Table

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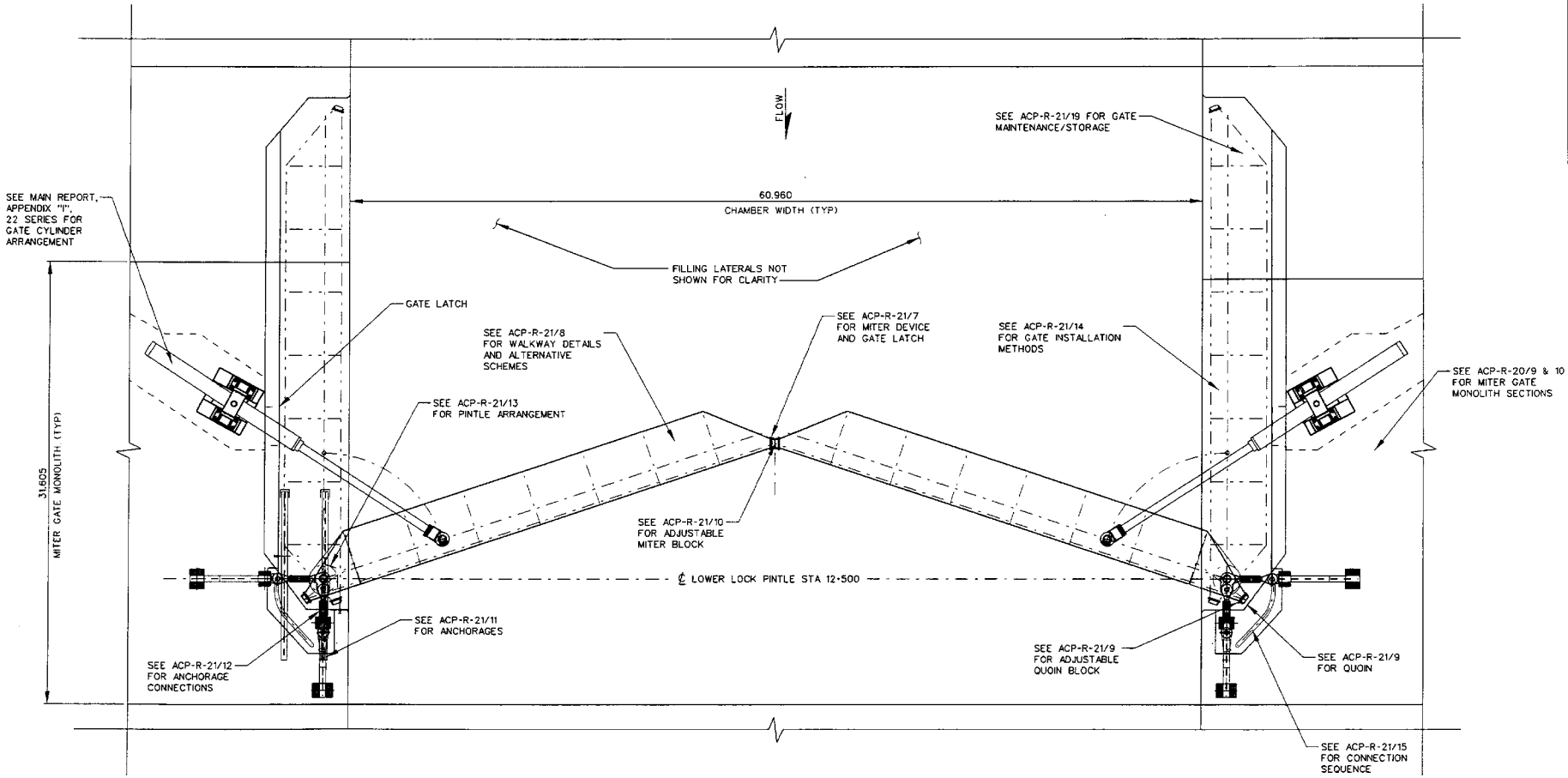
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK GATES
NORTH GATES - LOADING DIAGRAMS

Drawing Number: ACP-R-21/3



MITER GATE PLAN

SCALE: 1:150

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Design by: W.A.HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jlenkosh
Date: 28-MAR-2003 12:56
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

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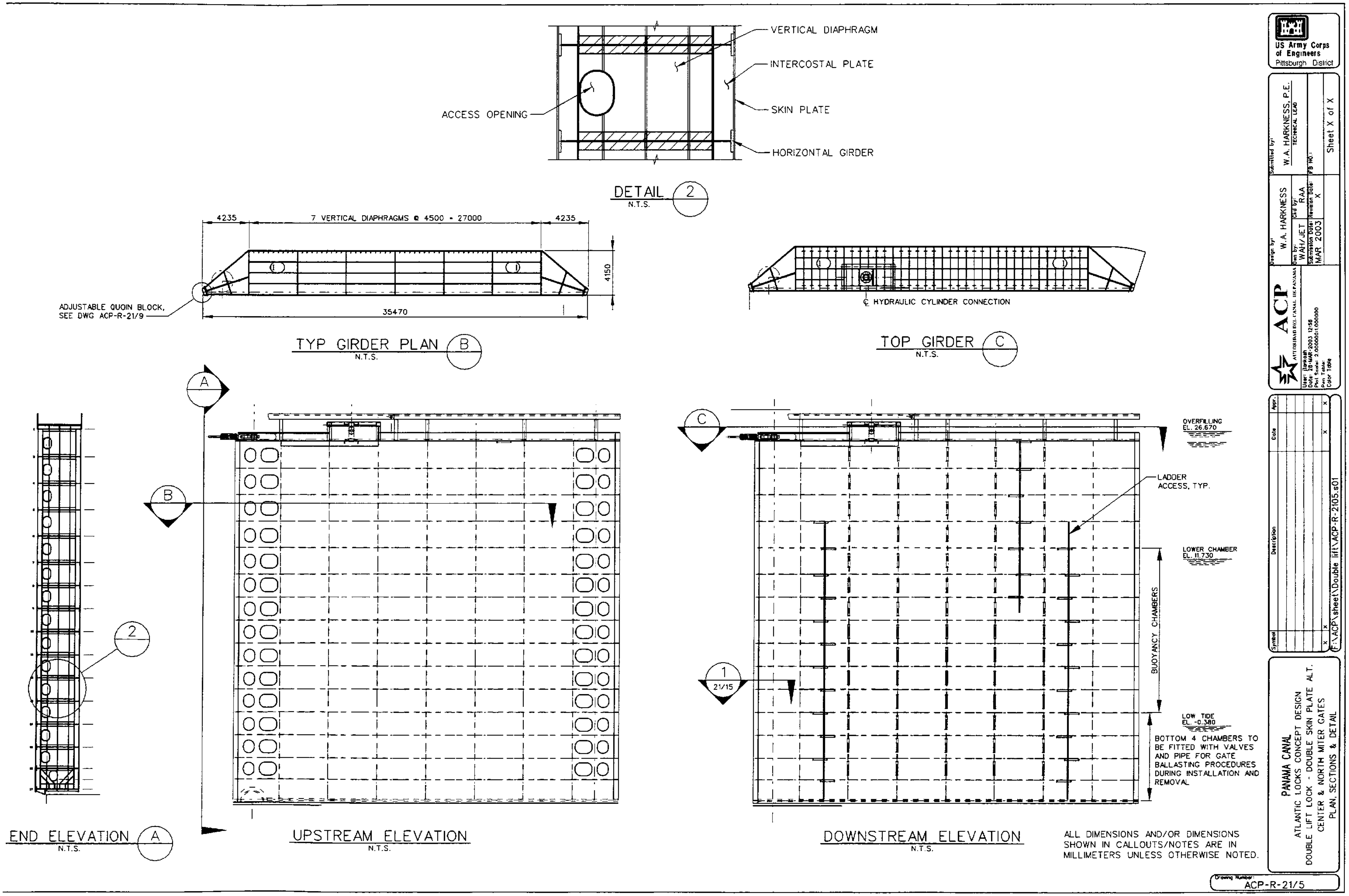
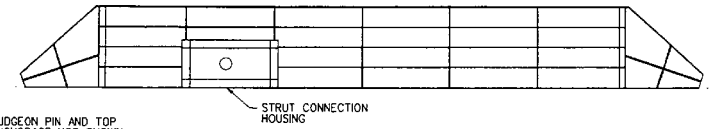
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATE
PLAN

Drawing Number: ACP-R-21/4

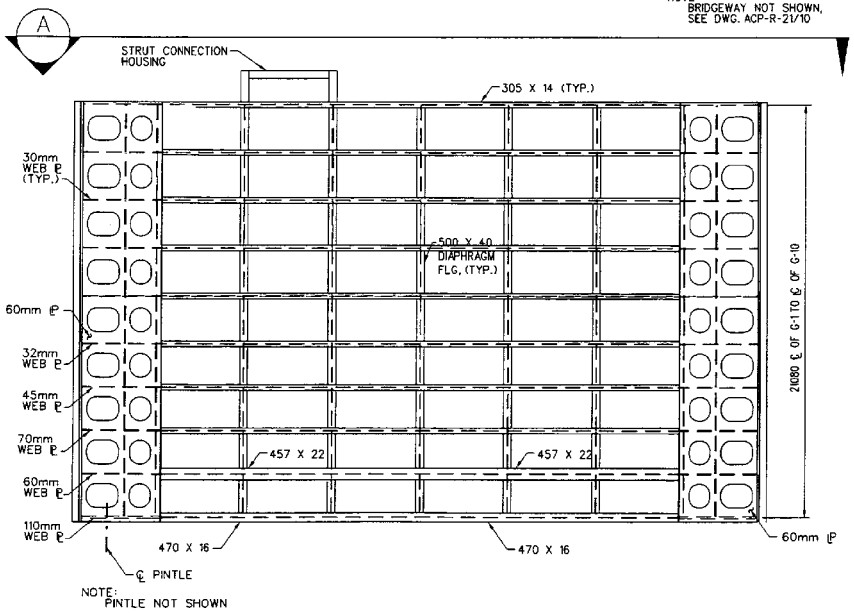

VERTICAL DIAPHRAGM
INTERCOSTAL PLATE
ACCESS OPENING
SKIN PLATE
HORIZONTAL GIRDER
DETAIL 2
N.T.S.
4235
7 VERTICAL DIAPHRAGMS @ 4500 = 27000
4235
4150
35470
ADJUSTABLE QUOIN BLOCK, SEE DWG ACP-R-21/9
TYP GIRDER PLAN B
N.T.S.
℄ HYDRAULIC CYLINDER CONNECTION
TOP GIRDER C
N.T.S.
OVERFILLING EL. 26.670
LADDER ACCESS, TYP.
LOWER CHAMBER EL. 11.730
BUOYANCY CHAMBERS
LOW TIDE EL. -0.380
BOTTOM 4 CHAMBERS TO BE FITTED WITH VALVES AND PIPE FOR GATE BALLASTING PROCEDURES DURING INSTALLATION AND REMOVAL
1
21/15
END ELEVATION A
N.T.S.
UPSTREAM ELEVATION
N.T.S.
DOWNSTREAM ELEVATION
N.T.S.
ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
US Army Corps of Engineers
Pittsburgh District
W. A. HARKNESS, P.E.
TECHNICAL LEAD
Sheet X of X
W. A. HARKNESS
WAH/JET
RAA
MAR 2003
ACP
F:\ACP\sheet\Double lift\ACP-R-2105.s01
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK - DOUBLE SKIN PLATE ALT.
CENTER & NORTH MITER GATES
PLAN, SECTIONS & DETAIL
ACP-R-21/5



NOTE:
GUDGEON PIN AND TOP ANCHORAGE NOT SHOWN.

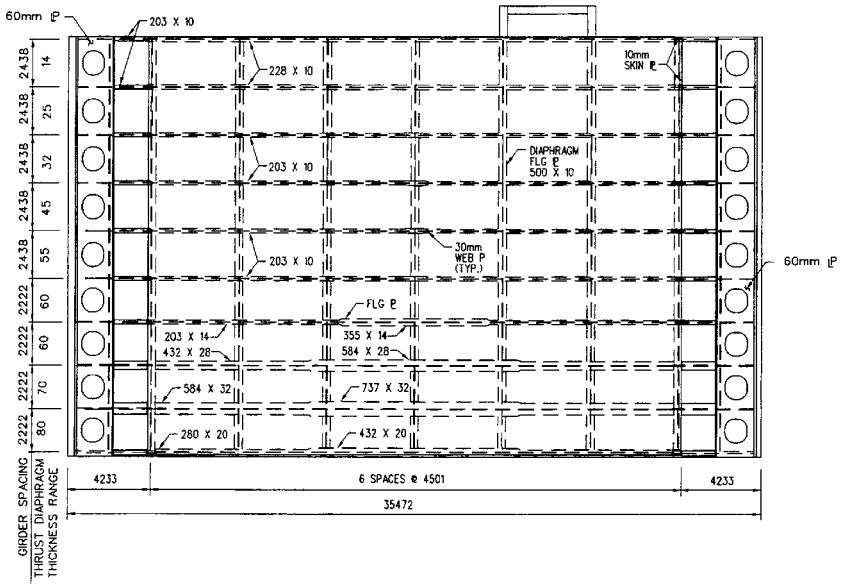
TOP VIEW (A)
SCALE: NTS

NOTE:
BRIDGEWAY NOT SHOWN, SEE DWG. ACP-R-21/10



NOTE:
PINTLE NOT SHOWN

DOWNSTREAM ELEVATION
SCALE: NTS



UPSTREAM ELEVATION
SCALE: NTS

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W. A. HARKNESS, P.E. TECHNICAL LEAD
Design by: D. KISH
Dwn by: MS
Chkd by: RAA
Submission Date: MAR 2003
Revision Date:
Revision Notes: X
P.S. NO.:
Sheet X of X

ACP
AUTORIDAD DEL CANAL DE PANAMA
Date: 13-Mar-03
Date Plotted: 13-Mar-2003 13:57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table:

Symbol	Description	Date	Appr.
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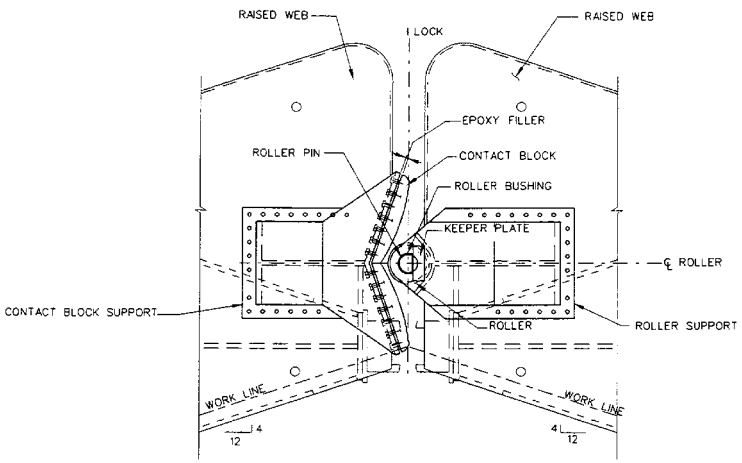
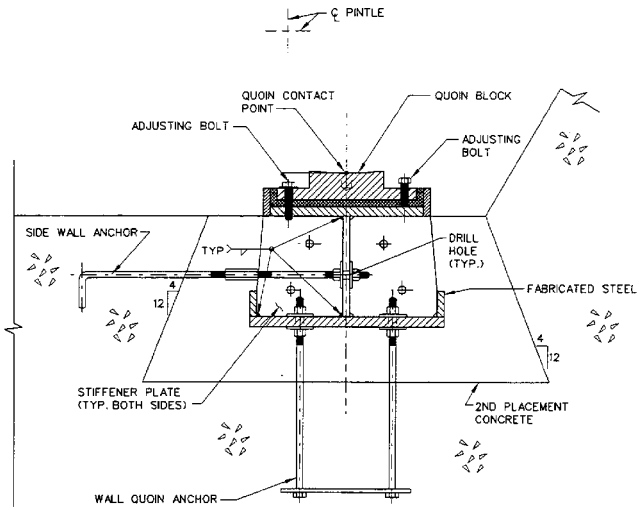
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATES - SOUTH GATES
PLANS AND SECTION ELEVATIONS

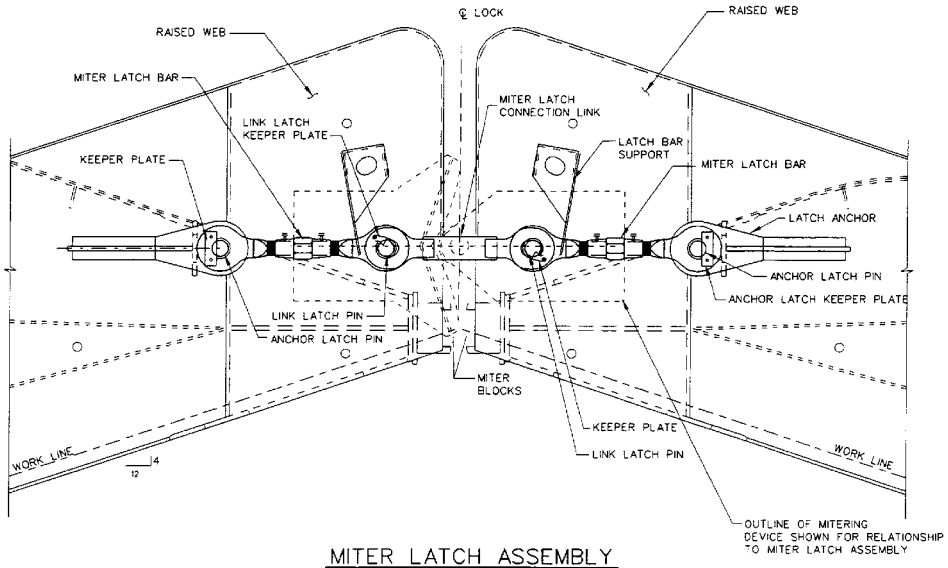
Drawing Number:
ACP-R-21/6



MITERING DEVICE ASSEMBLY
(MITER LATCH ASSEMBLY REMOVED)
N.T.S



WALL QUOIN ASSEMBLY
N.T.S



MITER LATCH ASSEMBLY
(MITER DEVICE REMOVED)
N.T.S

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: W.A.HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X
FB no.:

ACP
AUTOMATED DEL CANAL DE PANAMA
User: lamoash
Date: 28-MAR-2003 12:57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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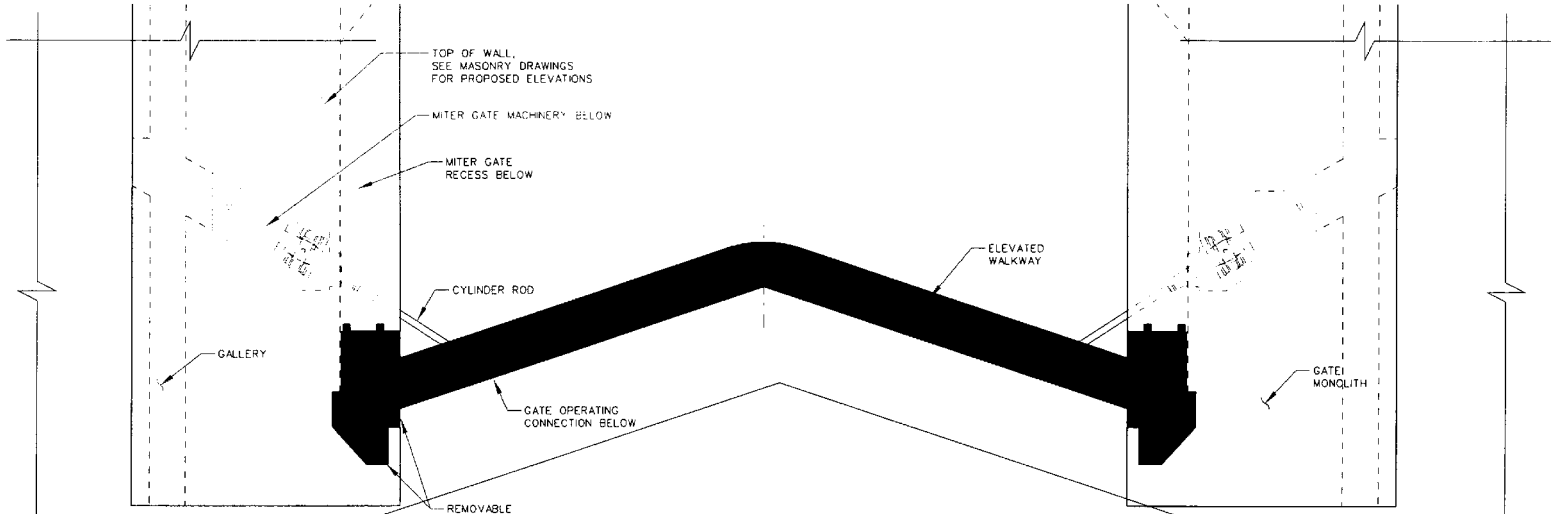
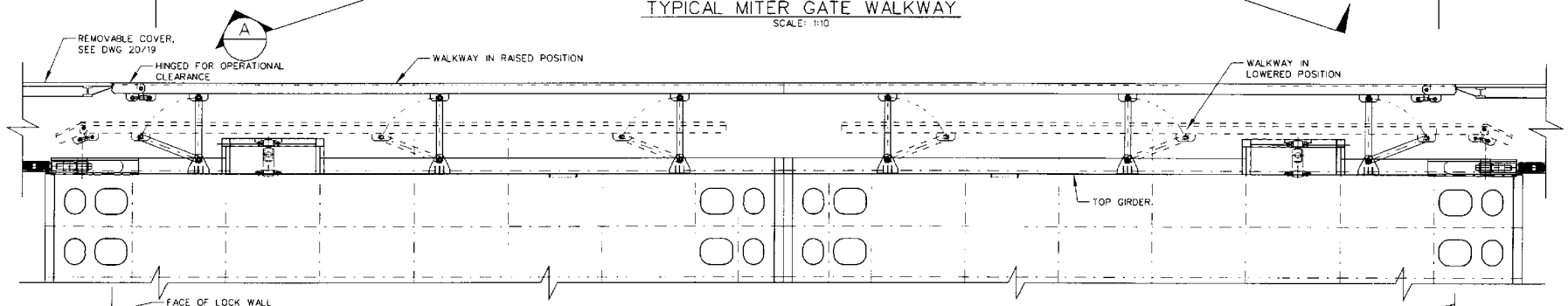
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER DEVICE, MITER LATCH & QUOIN ASSEMBLIES
DETAILS

Drawing Number: ACP-R-21/7



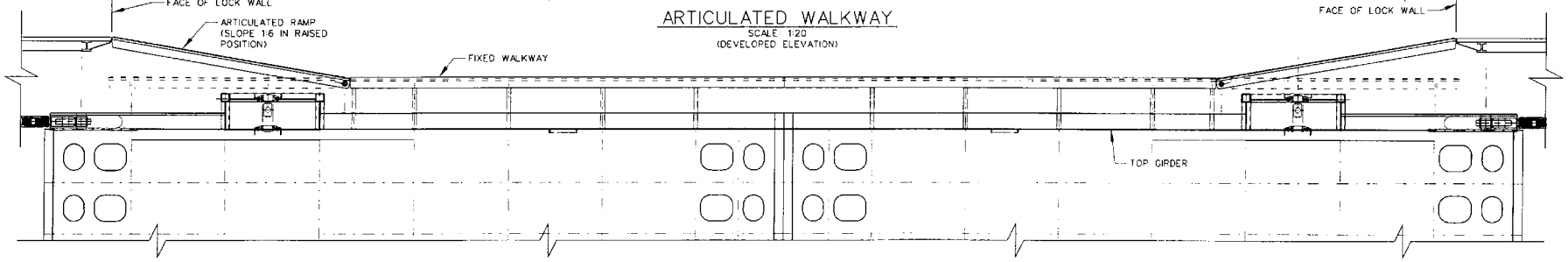
TYPICAL MITER GATE WALKWAY

SCALE: 1:10



ARTICULATED WALKWAY

SCALE: 1:20
(DEVELOPED ELEVATION)



ARTICULATED RAMP

SCALE: 1:20
(DEVELOPED ELEVATION)

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: W.A. HARKNESS
Dwn by: JF
Ckd by: RAA
Submitted Date: MAR 2003
Revision Date: X
F/B No.
Sheet X of X

ACP
ATLANTIC DIVISION, PANAMA
User: jfpowell
Date: 27-Mar-2003 13:57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table:

Symbol	Description	Date	Appr
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X		X	

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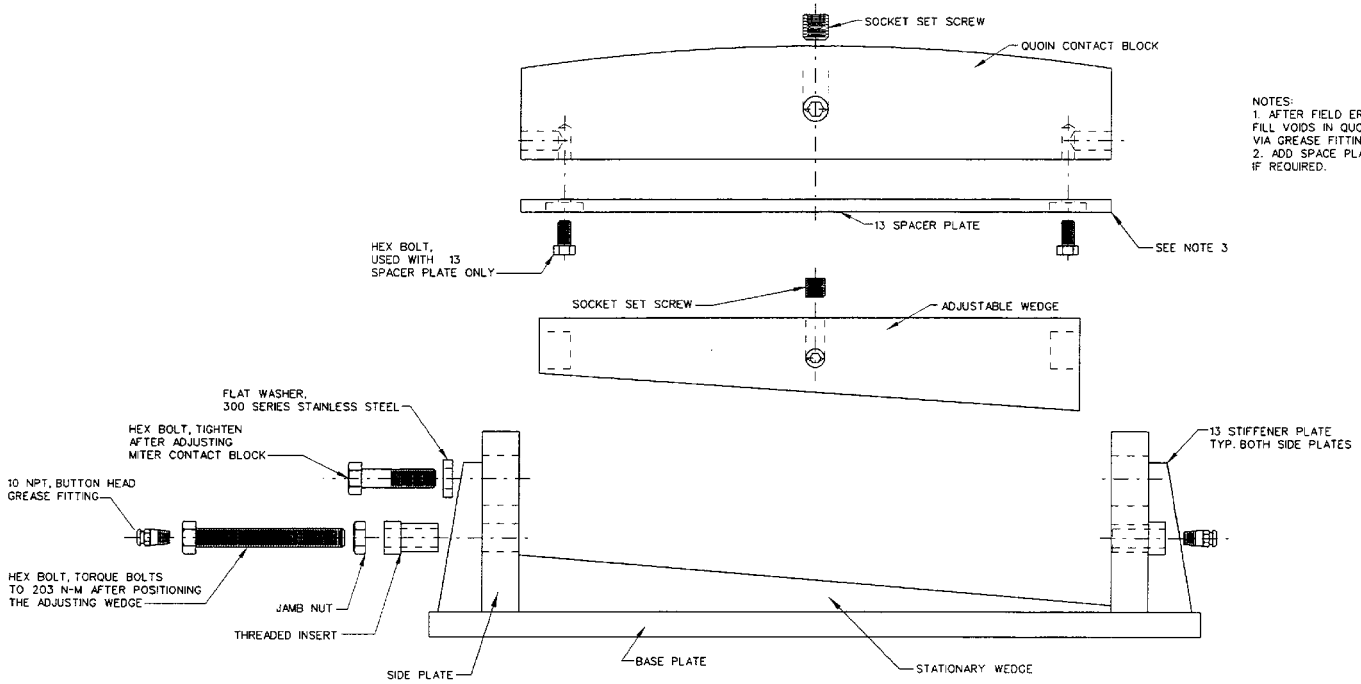
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK - MITER GATES
TYPICAL MITER GATE OPTIONS
PLAN & ELEVATIONS

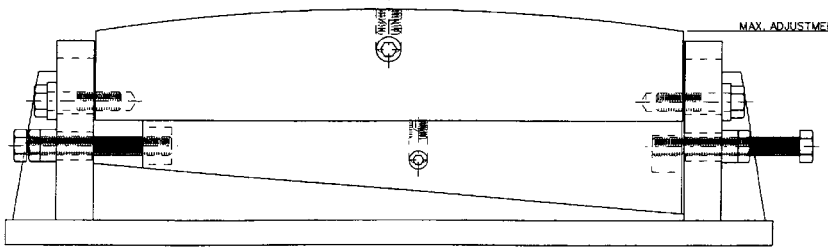
Drawing Number: ACP-R-21/8



NOTES:
1. AFTER FIELD ERECTION AND FINAL ADJUSTMENT OF QUOIN ASSEMBLY, FILL VOIDS IN QUOIN ASSEMBLY WITH DUPONT 111 VALVE LUBRICANT VIA GREASE FITTINGS.
2. ADD SPACE PLATE TO PROPERLY ADJUST QUOIN ASSEMBLY, IF REQUIRED.

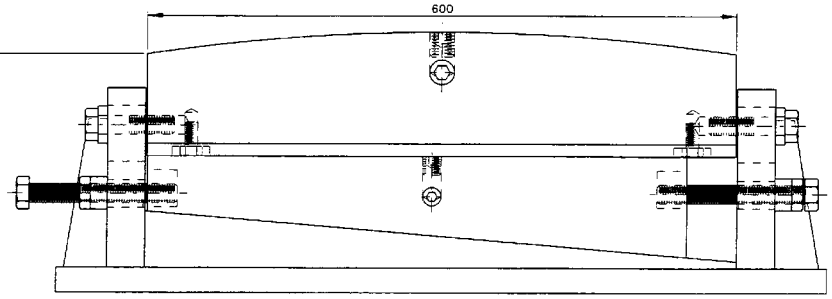
ADJUSTABLE QUOIN ASSEMBLY

N.T.S.



ADJUSTABLE QUOIN ASSEMBLY

SHOWN AT MINIMUM EXTENSION



ADJUSTABLE QUOIN ASSEMBLY

SHOWN AT MAXIMUM EXTENSION

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Design by: W.A. HARKNESS
Gen by: JET
Chk by: RAA
Submission Date: MAR 2003
Iteration Date: X
F/B NO.:
Sheet X of X

ACP
ATLANTIC DIVISION FULL LANG. IN PANAMA
View: Iteration
Date: 28 MAR 2003 12:57
Plot Scale: 2.000000:1.000000
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Symbol	Description	Date	Appr.

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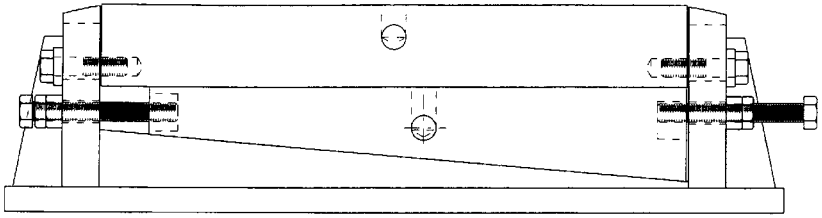
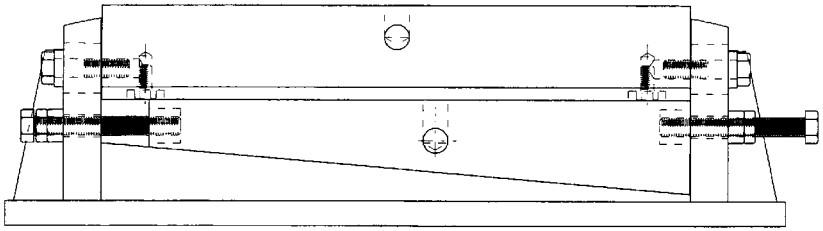
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK GATES
ADJUSTABLE QUOIN BLOCKS

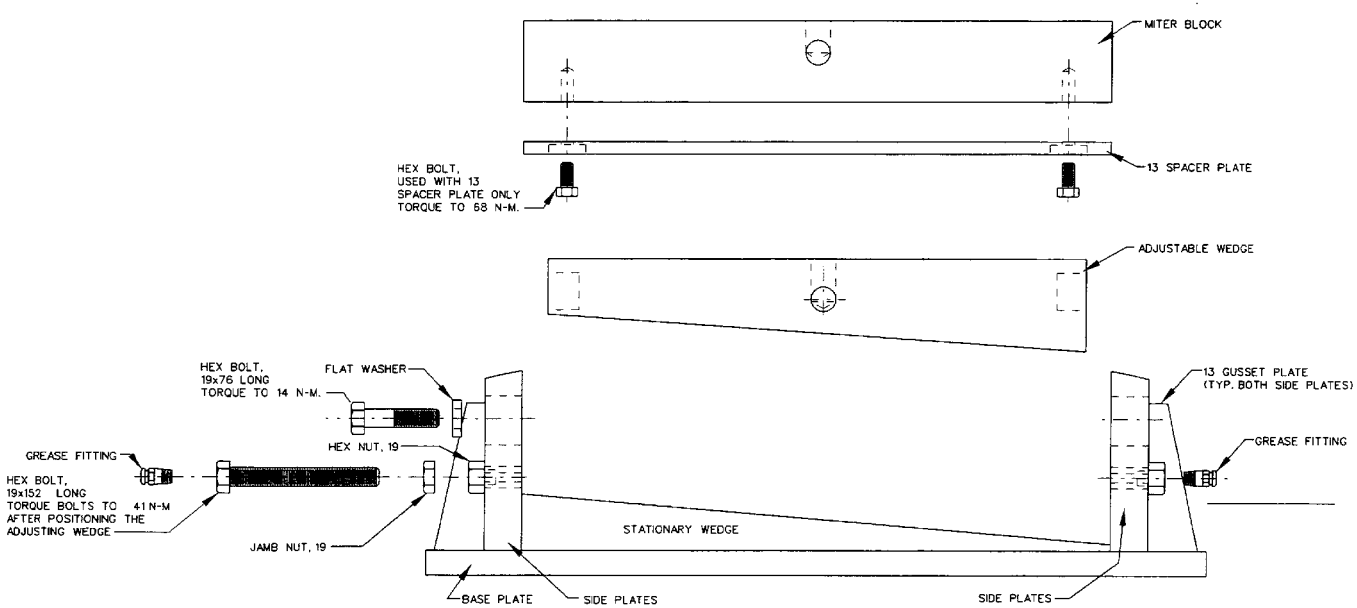
Drawing Number: ACP-R-21/9



ADJUSTABLE MITER ASSEMBLY
SHOWN AT MINIMUM EXTENSION
N.T.S.



ADJUSTABLE MITER ASSEMBLY
SHOWN WITH 13 SPACER
N.T.S.



ADJUSTABLE MITER ASSEMBLY
SHOWN WITH 13 SPACER PLATE
N.T.S.

NOTE:
MITER BLOCK ASSEMBLY PROVIDES 25mm RANGE OF ADJUSTMENT

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet X of X

Design by: W.A.HARKNESS
Dwn by: WAH/JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP AUTORIDAD DEL CANAL DE PANAMA
User: llankash
Date: 28-MAR-2003 12:57
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Pen Table:
Color Table:

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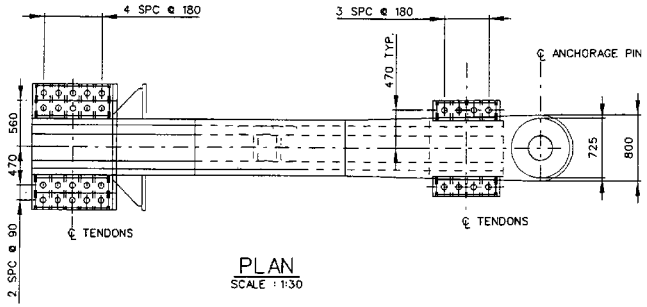
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK GATES - MITER CONTACT BLOCKS
ASSEMBLY DETAILS

Drawing Number: ACP-R-21/10



PLAN
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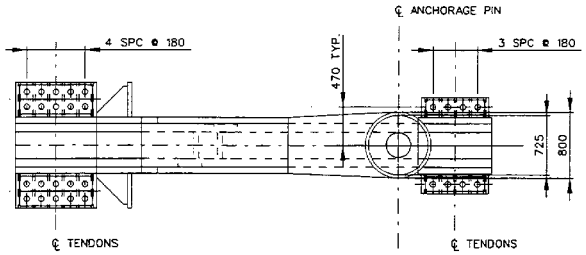

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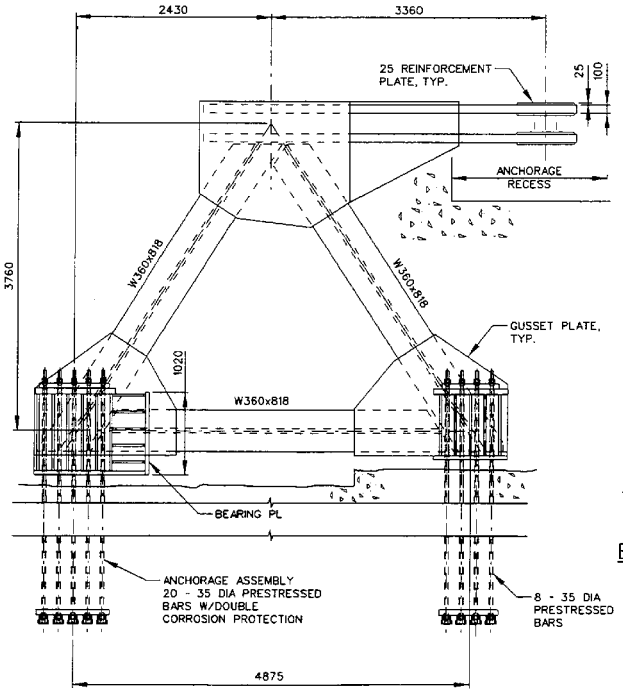

ELEVATION
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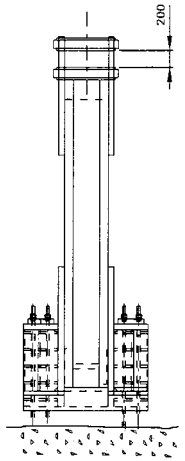
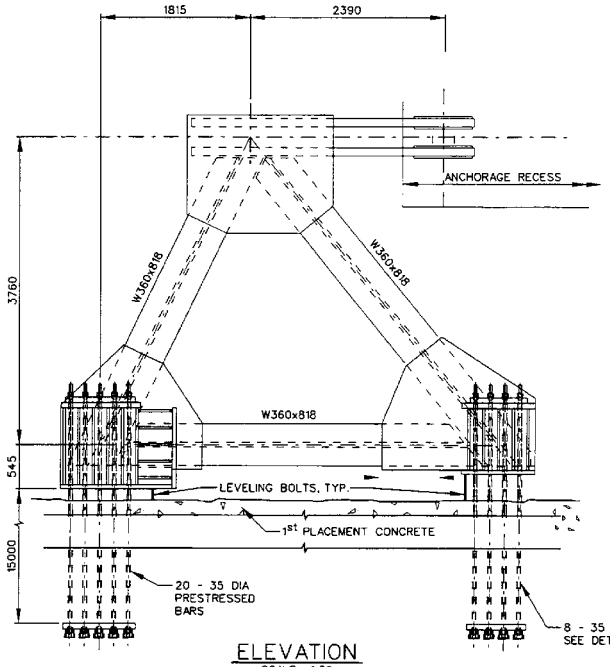
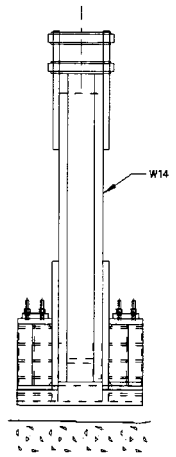


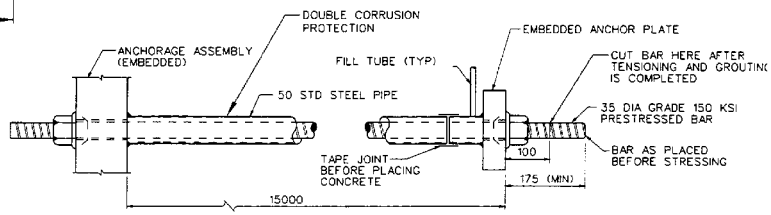
END ELEVATION
SCALE : 1:30



ELEVATION
SCALE : 1:30



END ELEVATION
SCALE : 1:30



DETAIL 1
SCALE : 1:20

MATERIAL: ASTM A572M
GRADE 345

NOTES:
1. INSTALL POST - TENSIONING SYSTEM
2. PLACE CONCRETE TO PRE-DETERMINED ELEVATION, 100mm BELOW FRAME BASE PLATE
3. LEVEL AND PLUMB FRAMES USING LEVELING BOLTS. PLACE NON-SHRINK GROUT UNDER BASE PLATE
4. TENSION ANCHORAGE BARS
5. CONTINUE W/CONCRETE PLACEMENT

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
P.E. NO.:
Sheet X of X

Design by: A. HARKNESS, PE
Dwn by: AH
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: Jbrosch
Date: 28 MAR 2003 12:37
Filename: Z:\200500\1000000
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Color Table

Symbol	Description	Date	Appr.
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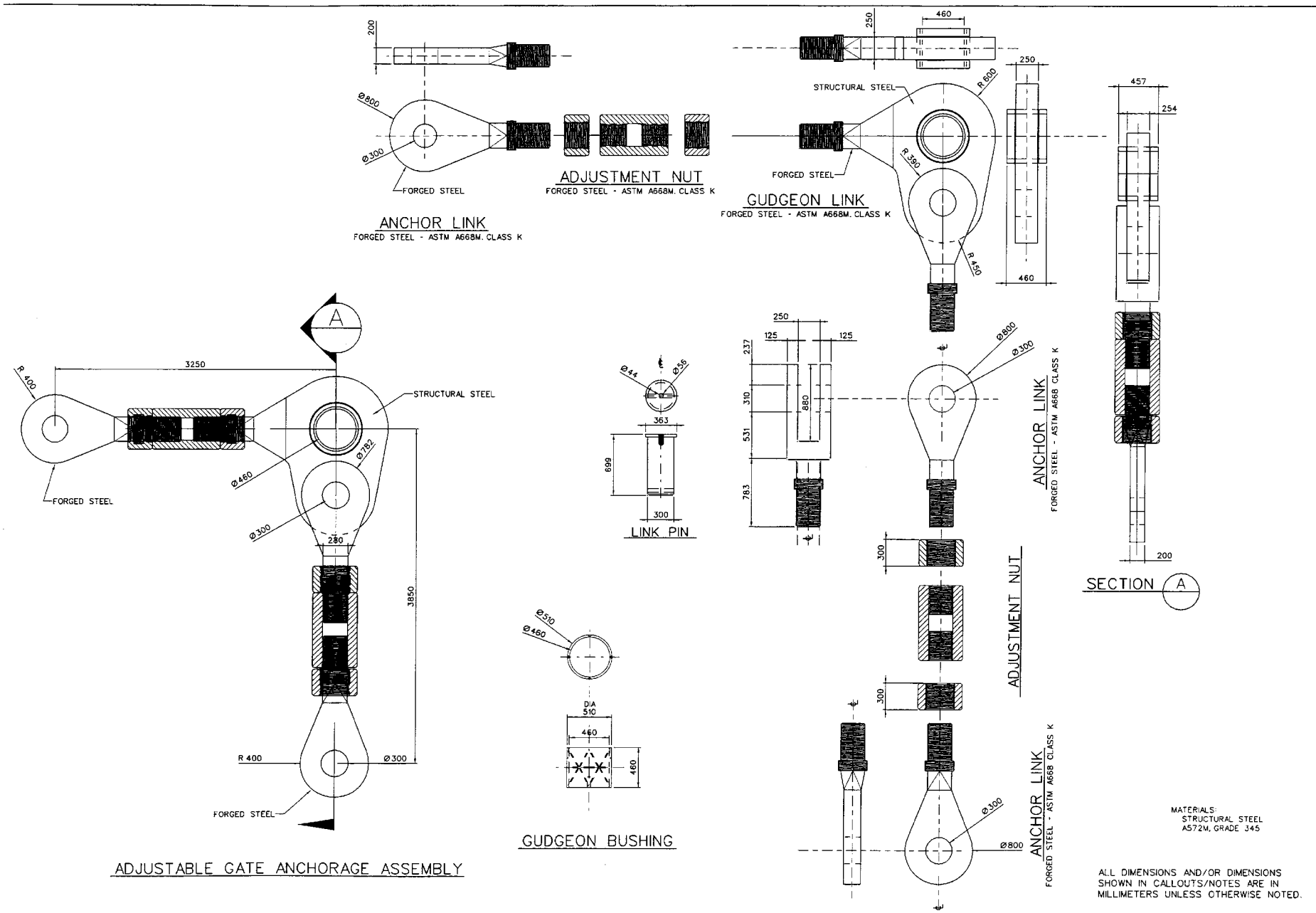
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK GATES
EMBEDDED GATE ANCHORAGE FRAMES

Drawing Number:
ACP-R-21/11



US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: W.A. HARKNESS
Dwn by: WAH/JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTHORIZED DIST. CANAL, DX PANAMA
User: lanbosh
Date: 28-MAR-2003 12:57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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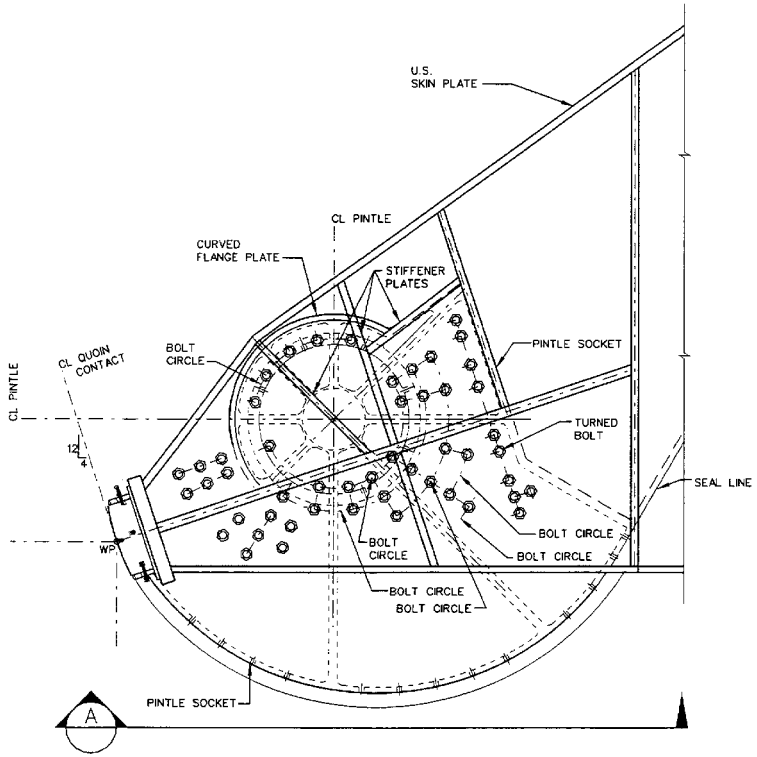
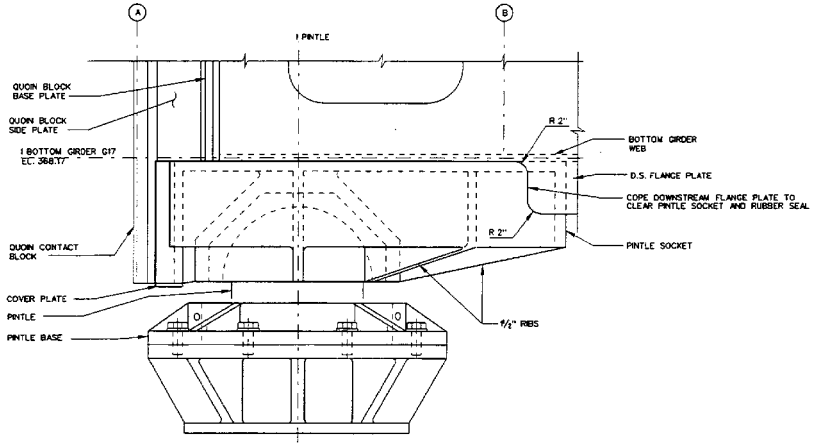
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
LOCK GATES - ADJUSTABLE ANCHORAGE
PLAN AND SECTIONS

Drawing Number: ACP-R-21/12



PINTLE DETAIL (1 / 21/5)
SCALE: 1:20



PINTLE SOCKET ELEVATION (A)
SCALE: 1:20

ALL DIMENSIONS AND/OR DIMENSIONS
SHOWN IN CALLOUTS/NOTES ARE IN
MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: W.A.HARKNESS
Dwn by: JET
Chkd by: RAA
Submission Date: MAR 2003
Revision Date: X
Plot Scale: 1:1000000
Plot Date: 28-MAR-2003 12:57
Color: False

ACP
ALTERNATIVE PANAMA CANAL STUDY

Symbol	Description	Date	Appr.
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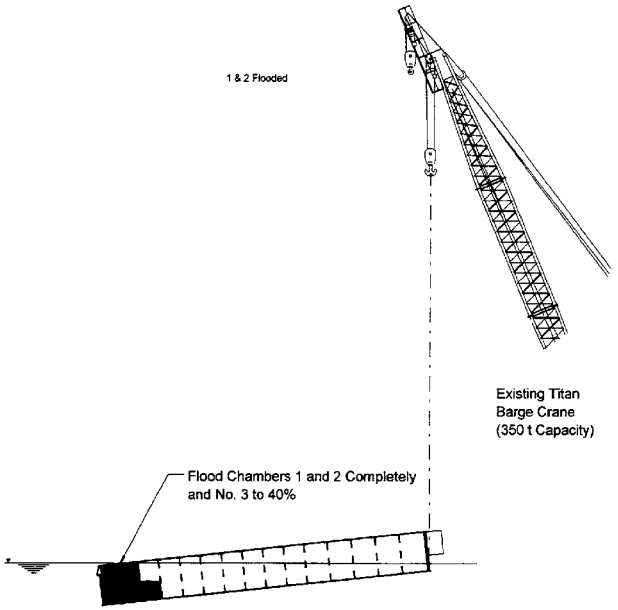
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATES - PINTLE DETAILS
ELEVATION AND DETAIL

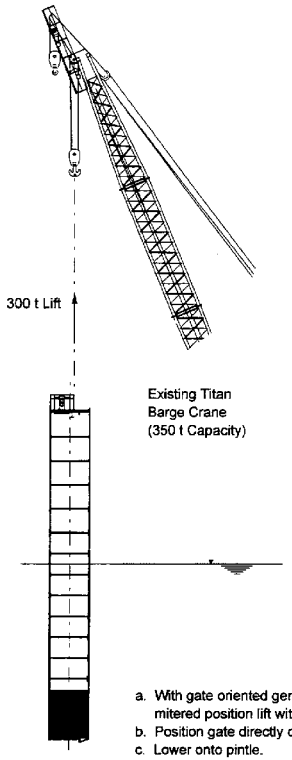
Drawing Number: ACP-R-21/13

Sheet X of X



a. Float gate to project area.
b. Flood chambers 1, 2, and 3 (chamber 3 to 40%).
c. Attach Titan's lifting beam to gate
e. Move gate and crane into lock chamber in proximity to pintle.

STEP 1

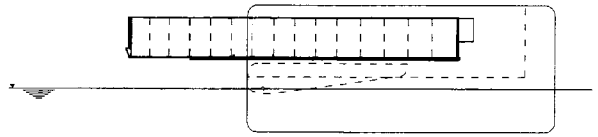


a. With gate oriented generally in a mitered position lift with 300 t.
b. Position gate directly over pintle.
c. Lower onto pintle.
d. Flood bottom 4 chambers.
e. Install gudgeon pin.
f. Disconnect lifting beam.

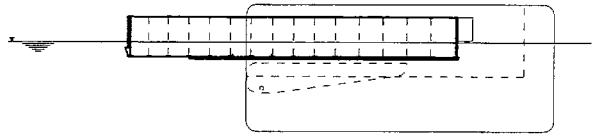
STEP 2

INSTALLATION METHOD 1 - RIGHTING GATE IN HIGH POOL
N.T.S.

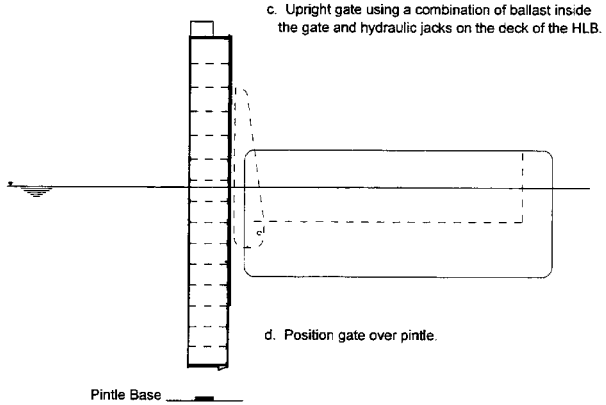
ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



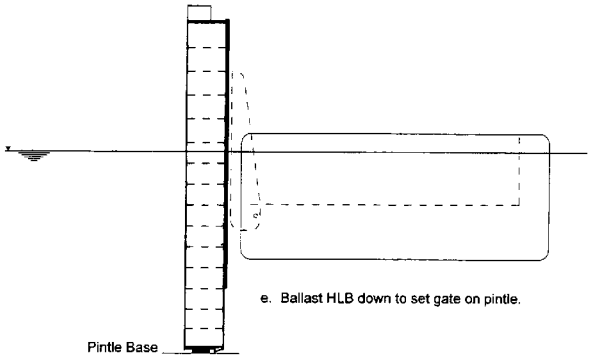
a. Float Heavy Lift Barge with gate to project area.



b. Partially Ballast HLB to begin gate rotation.
c. Upright gate using a combination of ballast inside the gate and hydraulic jacks on the deck of the HLB.



d. Position gate over pintle.



e. Ballast HLB down to set gate on pintle.

INSTALLATION METHOD 2
N.T.S.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: W.A. HARKNESS
Dwn by: WAH/JET
Ckd by: RAA
Scale: NONE
Date: MAR 2003
Revision Date: X
IFB NO.:
Sheet X of X

ACP
ATITLAN BAR DEL CANAL DE PANAMA
Date: Tuesday
Date Saved: 2003 12 57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table:

Symbol	Description	Date	Appr.
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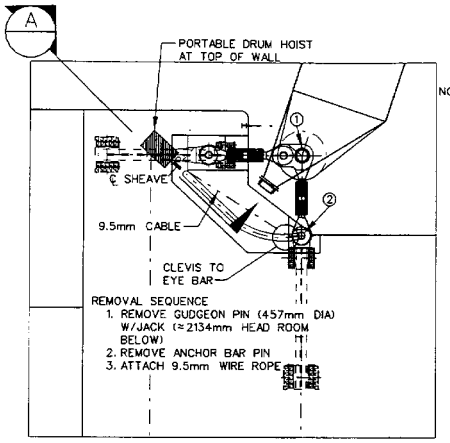
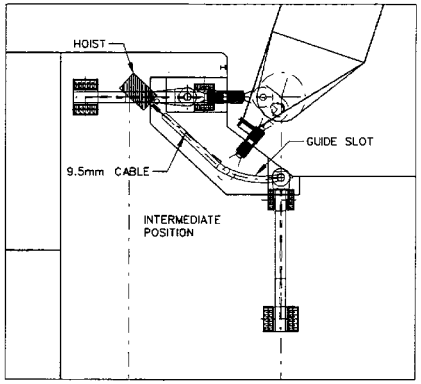
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATES - INSTALLATION SEQUENCE
METHODS 1 & 2

Drawing Number: ACP-R-21/14



NOTES:
1. JACK STAND PROVIDED UNDER GUDGEON FOR REMOVAL.
2. SKID PLATES PROVIDED W/UHMWPE BEARINGS FOR SMOOTH SLIDING OF ASSEMBLIES ACROSS GATE AND IN RECESS.

SEQUENCE 1
SCALE: 1:100



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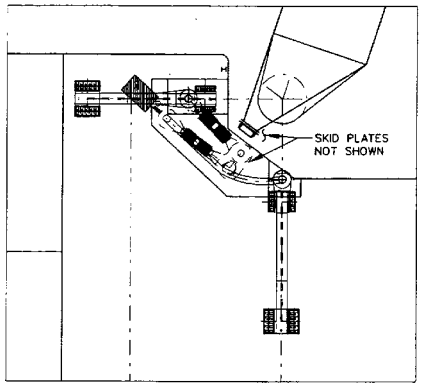

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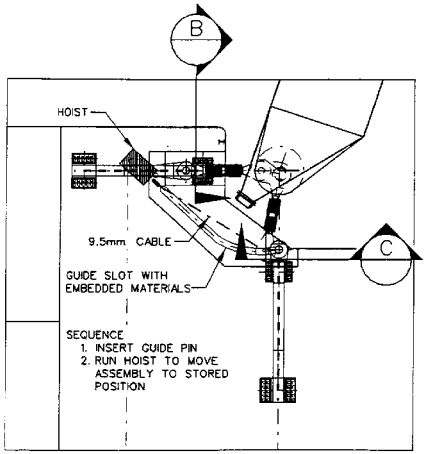

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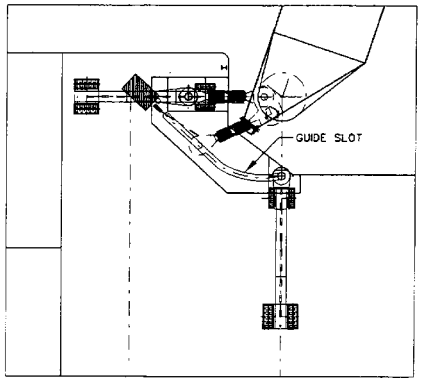
SCALE: 1:100



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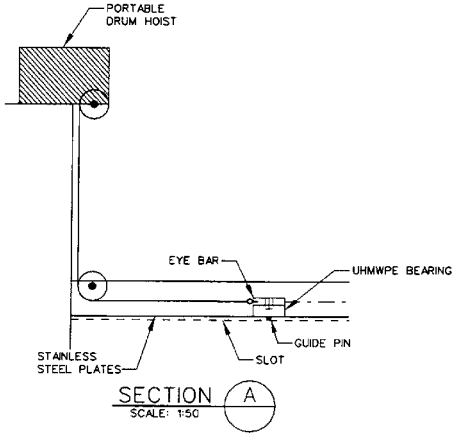

SECTION A
SCALE: 1:50

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A.HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: W.A.HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jtankesh
Date: 28-MAR-2003 12:57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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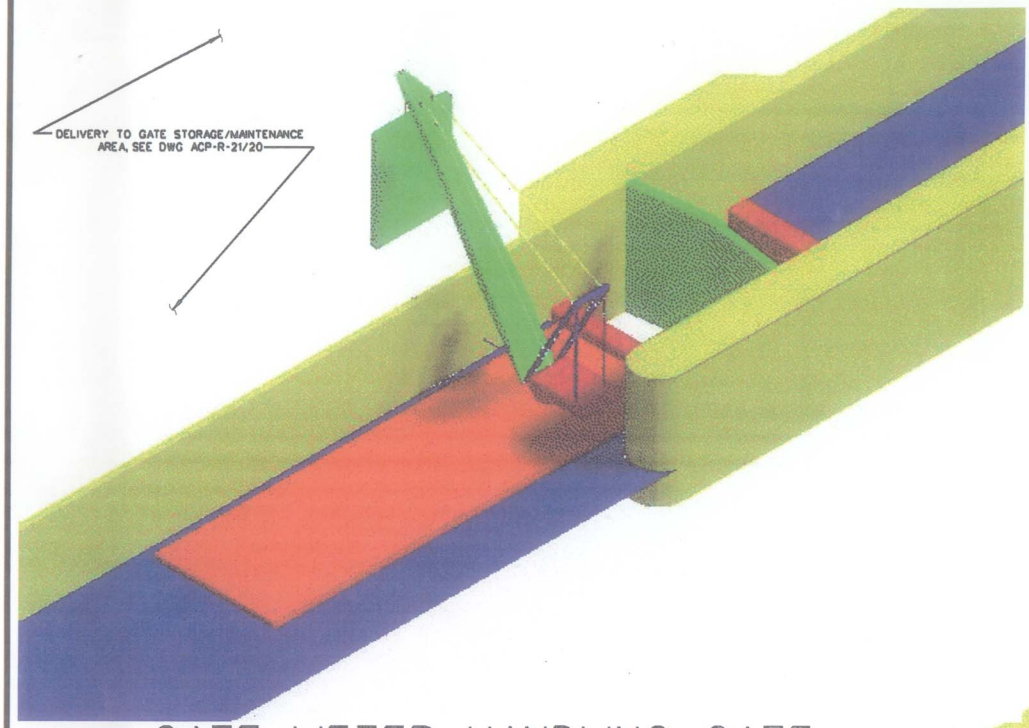
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATE ANCHORAGE REMOVAL SEQUENCE
PLAN & SECTION

Drawing Number: ACP-R-21/15



GATE LIFTER HANDLING GATE

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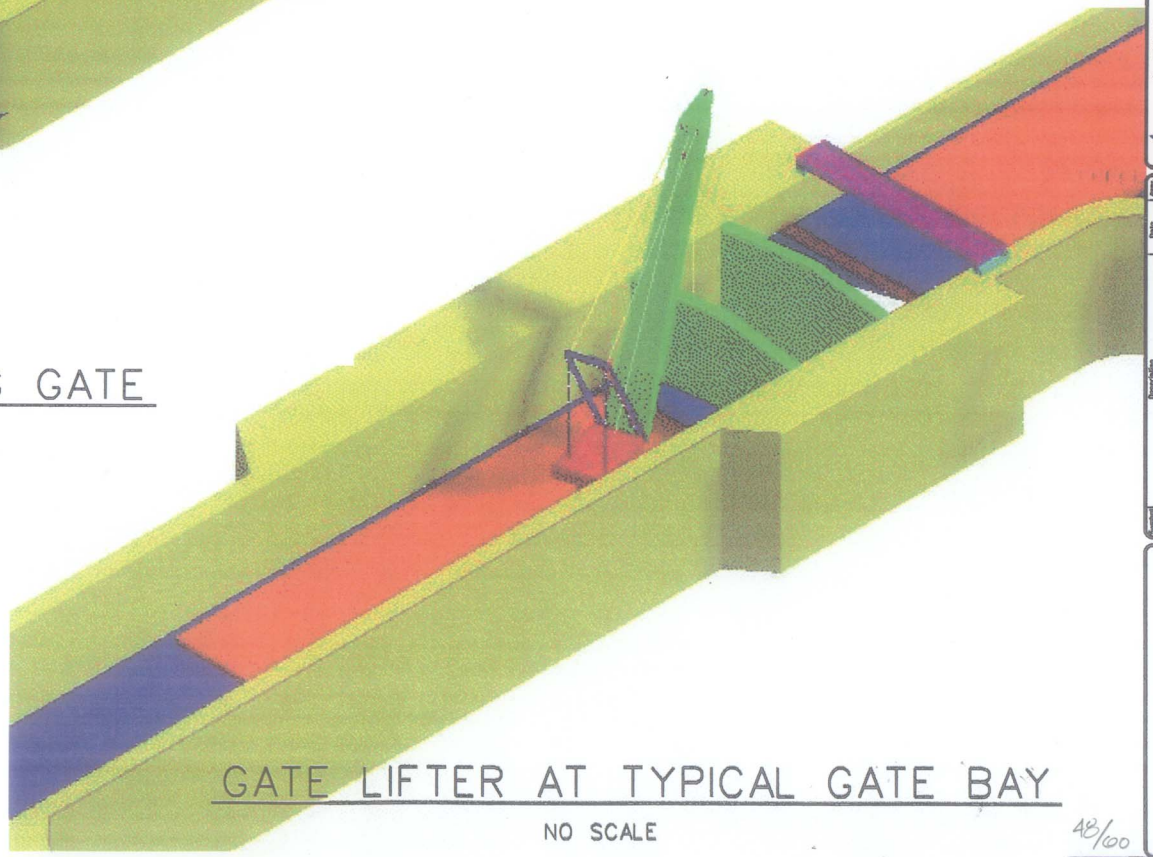


GATE LIFTER AT TYPICAL GATE BAY

NO SCALE

US Army Corps of Engineers
Pittsburgh District

ACP
AUTORIDAD DEL CANAL DE PANAMA

Design by: W.A.HARKNESS
Dwn by: JET
Ckd by:
Submitted by: W. A. HARKNESS, P.E. TECHNICAL LEAD
Date: Oct 2002
Revision Date: X
Sheet X of X

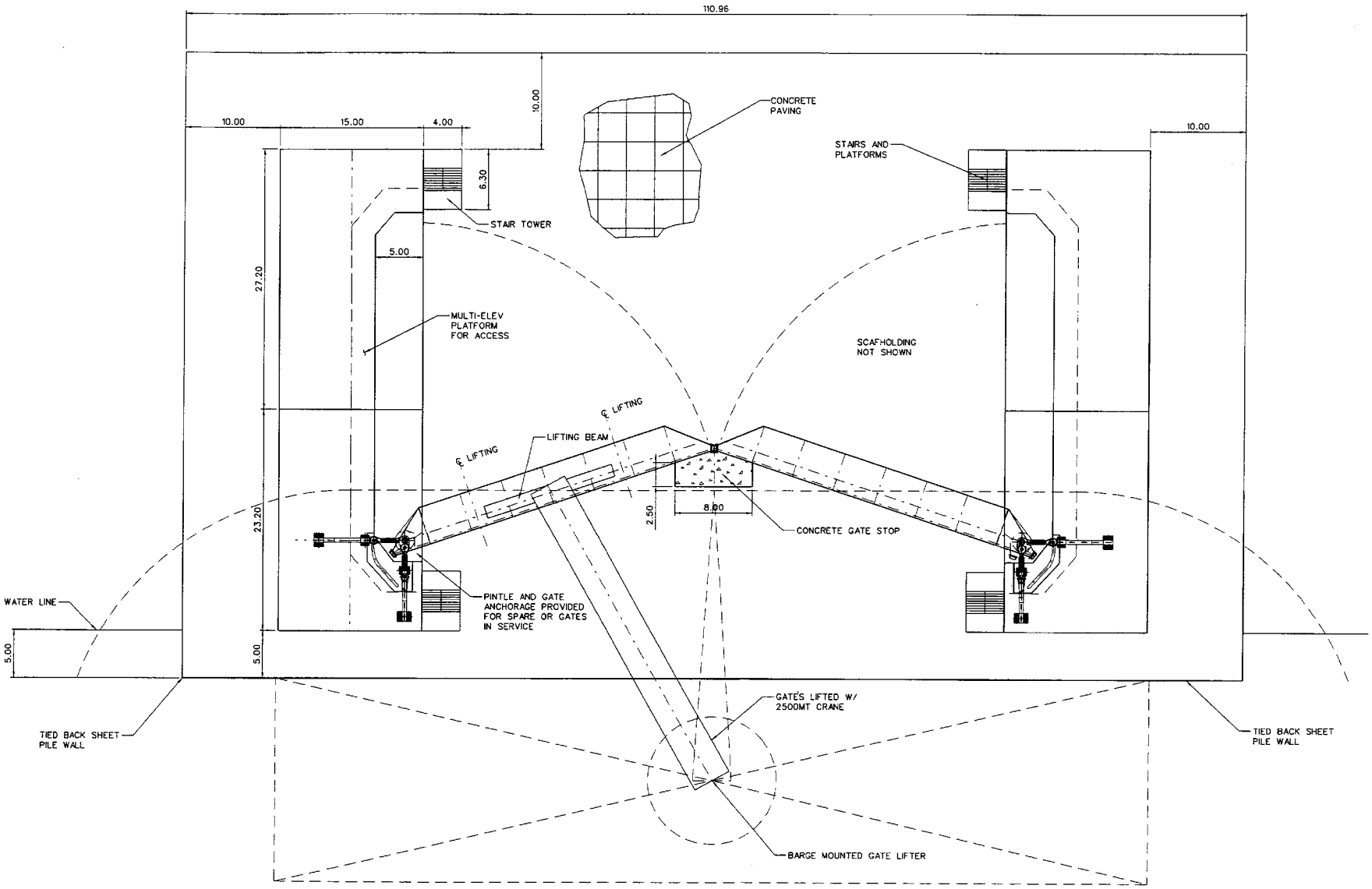
Symbol	Description	Date	Appr.
X	X	X	X

Filename

PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
MITER GATES - INSTALLATION SEQUENCES
GATE LIFTER

48/60

Drawing Number: ACP-R-21/16



ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet X of X

Design by: W.A. HARKNESS
Dwn by: JET
Ckd by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jtonkosh
Date: 28-MAR-2003 12:37
Plot Scale: 2.0000001.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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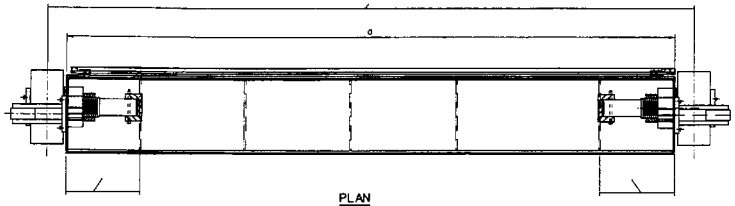
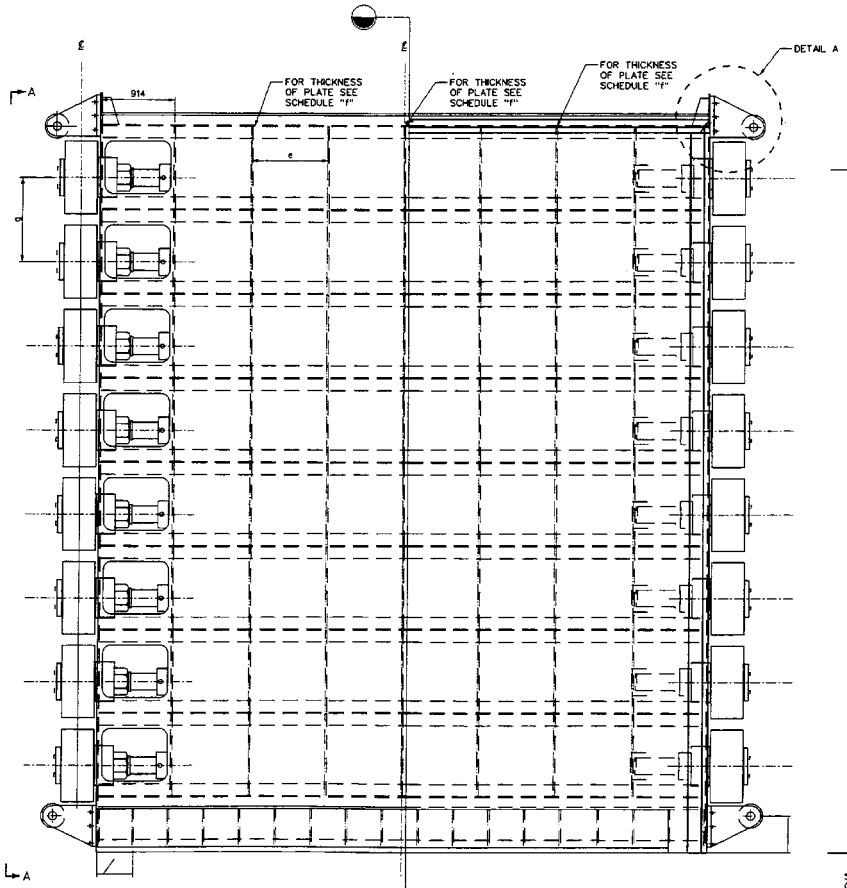
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
GATE STORAGE/MAINTENANCE PLAN

Drawing Number: ACP-R-21/17



PLAN
SCALE: 1:20

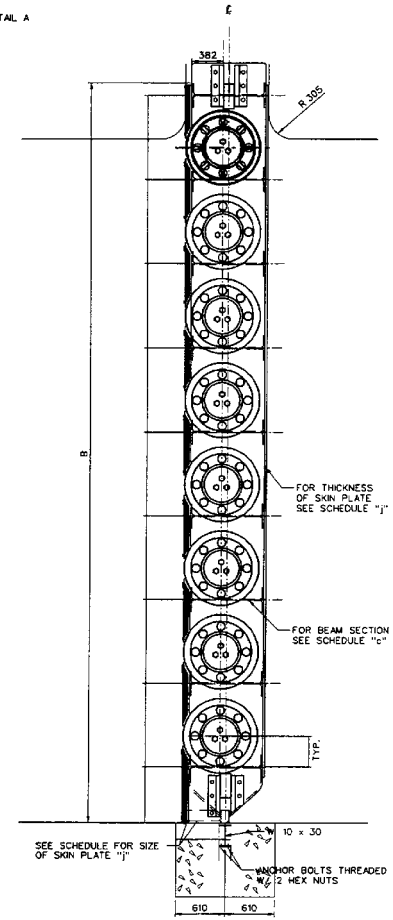
Gate Schedule												
6M Culvert												
	a	B		c	d		e	f		g	h	j
Gate	Width	Height	No. Beams	Beam Designation	Beam Spacing	No. Vert. Stiffener PL	Max Stiffener Spacing	Stiffener PL Thickness	No. of Wheels	Wheel Spacing	CL to CL of Wheel	Skin PL Thickness
Valves Between Locks	7000	9070	9	W 920 X 201	1029	7	1034	19	16	1029	7470	25
Upper & Lower Valves	7000	9070	9	W 920 X 201	1029	7	1034	14	16	1029	7470	19
7M Culvert												
Upper & Lower Valves	8000	9070	9	W 920 X 223	1029	7	1029	19	16	1029	8470	19
Valves Between Locks	8000	9070	9	W 920 X 223	1029	7	1029	25	16	1029	8470	25
4M Culvert												
4mx7m Culvert Valve	5000	8041	8	W 920 X 201	1029	5	1057	19	14	1029	5470	22



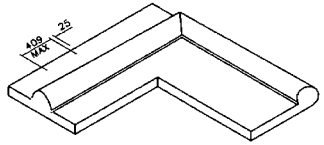
HALF DOWNSTREAM ELEVATION
SCALE: 1:20

HALF UPSTREAM ELEVATION
SCALE: 1:20

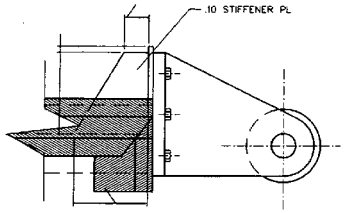
ELEVATION
SCALE: 1:20



VIEW A-A
SCALE: 1:20



SEAL DETAIL
N.T.S.



*RUBBER SEAL NOT SHOWN

DETAIL A
SCALE: 1:60

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: P. LUCIANO
Dwn by: PL/JET
Ckd by: DLB
Submission Date: MAR 2003
Revision Date: X
IFB NO.:
Sheet X of X

ACP AUTORIDAD DEL CANAL DE PANAMA
User: jlankash
Date: 26-MAR-2003 12:57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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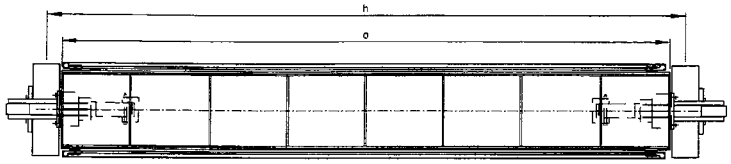
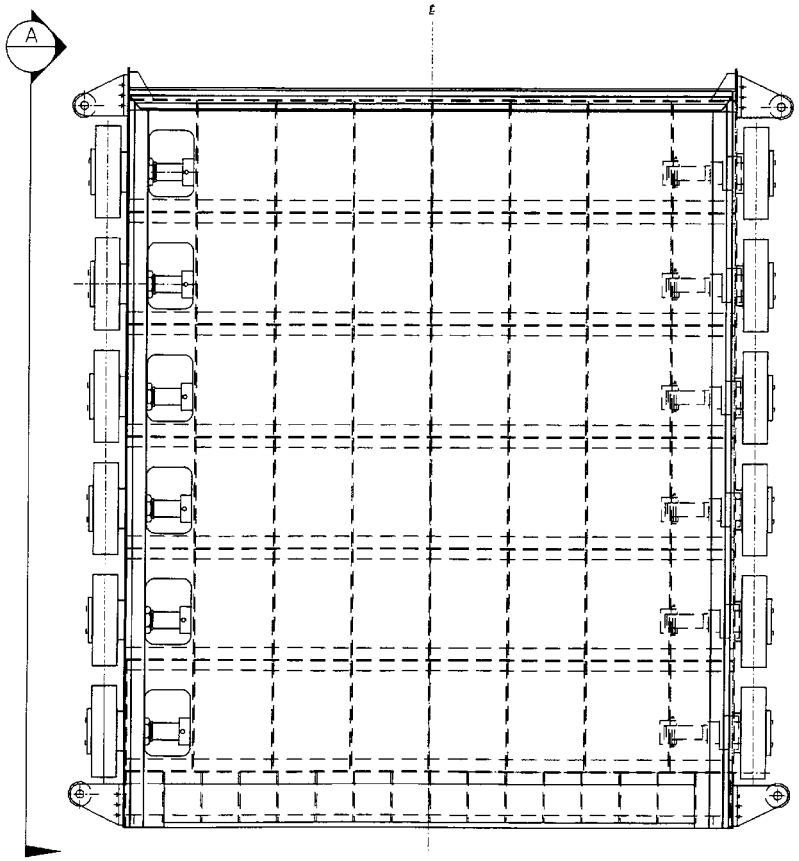
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
GATE VALVES - CULVERT VALVE
PLAN, SECTION AND DETAIL

Drawing Number: ACP-R-25/1



PLAN
SCALE: 1:30

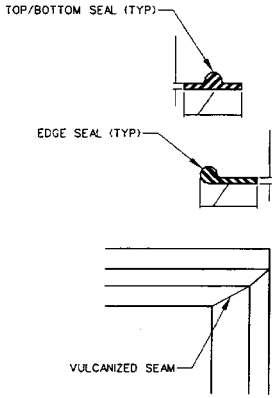
Gate Schedule														
	a	b		c	d			e	f		g	h	j	
Gate	Width	Height	No. Beams	Beam Designation	Beam Spc	No. Stiff	PL	Stiffner Spc	PL Thck	No. Wheels	Wheel spc	CL to CL wheel	Skin PL	
Valves between Locks	7468	8230	9	W 36 X 135	1029	7		1245	25	16	1029	25	25	
Upper Lock Fill Valves	7468	8230	9	W 36 X 135	1029	7		1245	19	16	1029	19	19	
WSB Valves	7468	8230	7	W 36 X 135	1372	7		1067	16	12	1372	16	16	
WSB Valves	8467	8230	8	W 36 X 135	1177	7		1411	16	14	1177	16	16	
Upper Lock Fill Valve	8467	8230	9	W 36 x 150	1029	7		1210	19	16	1029	19	19	
Valves between Locks	8467	8230	9	W 36 x 150	1029	7		1210	25	16	1029	25	25	
WSB Valves	7468	8230	7	W 36 X 135	1372	7		1067	16	12	1372	16	16	
WSB Valves	8467	8230	8	W 36 X 135	1177	7		1411	16	14	1177	16	16	



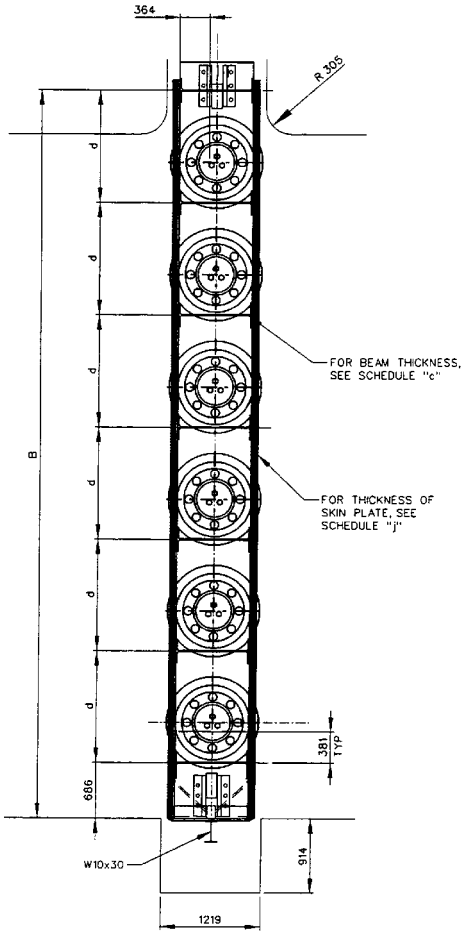
HALF DOWNSTREAM ELEVATION

HALF UPSTREAM ELEVATION

ELEVATION
SCALE: 1:30



RUBBER SEAL DETAILS
SCALE: 1:10



ELEVATION (A)
SCALE: 1:30

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Sheet X of X

Design by: P. LUCIANO
Dwn by: PL/JET
Chk by: DLB
Submission Date: MAR 2003
Revision Date: X
RFS NO.:

ACP
ESTUDIOS INTEG. LINEAL DEL PANAMA
User: Bernasch
Date: 28-MAR-2003 12:57
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Plot Rotation: 0
Color Table:

Symbol	Description	Date	Appr.
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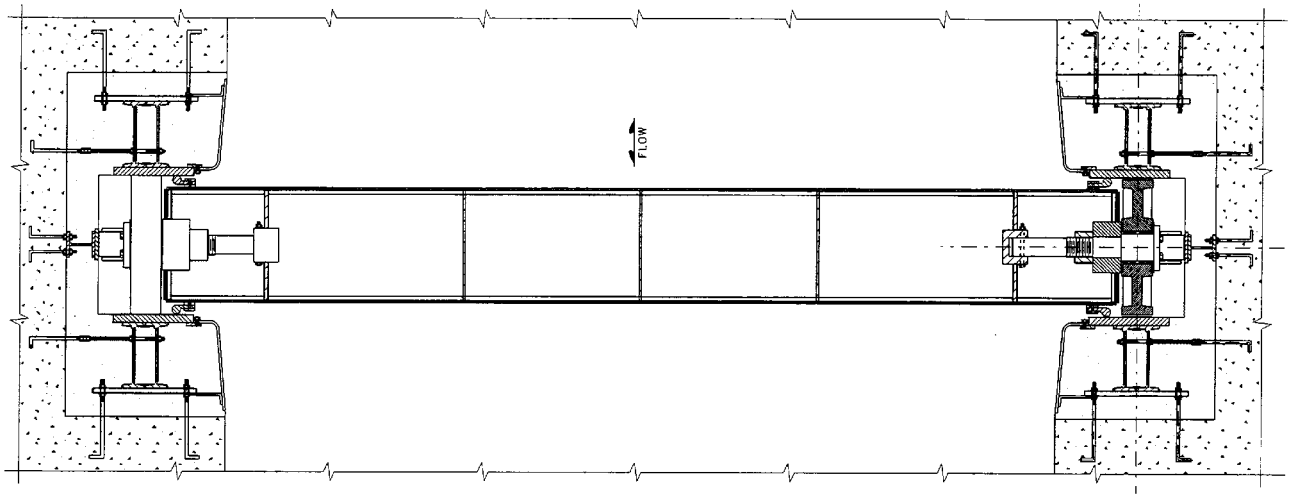
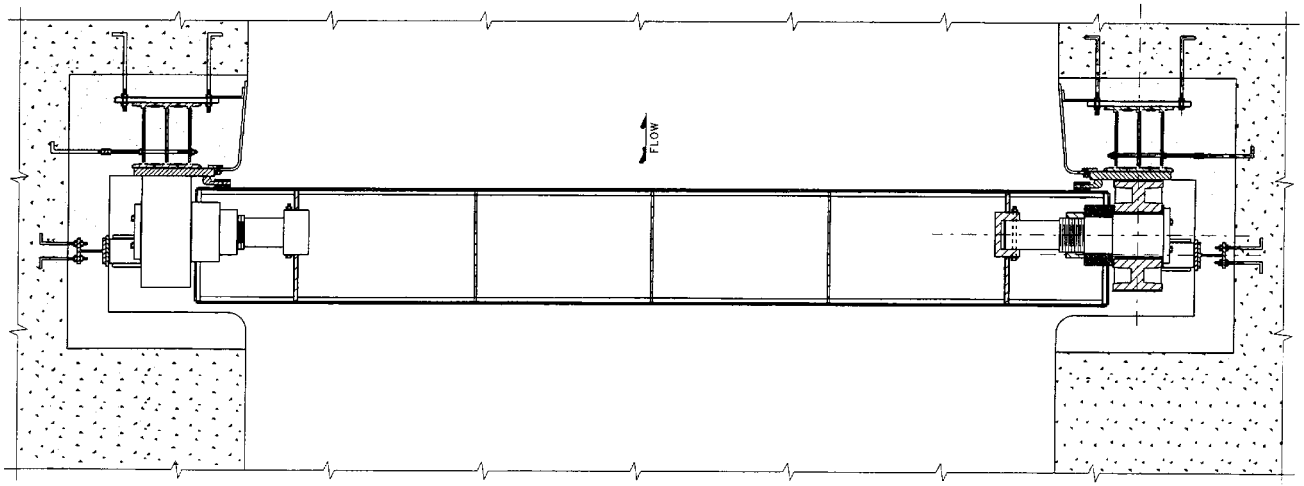
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
GATE VALVES - CONDUIT VALVE
PLAN, SECTION & DETAILS

Drawing Number: ACP-R-25/2



CONDUIT VALVE WHEELS



CULVERT VALVE WHEELS

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

FB NO.:

Sheet X of X

Design by: R.WITTEN/D.BUCCINI

Dwn by: JLF/JJP

Ckd by: DLB

Submission Date: MAR 2003

Revision Date: X

ACP AUTORIDAD DEL CANAL DE PANAMA

User: jkenkosh
Date: 28-MAR-2003 12:57
Plot Scale: 2.000000:1.000000
Pen Table:
Color Table

Symbol	Description	Date	Appr.
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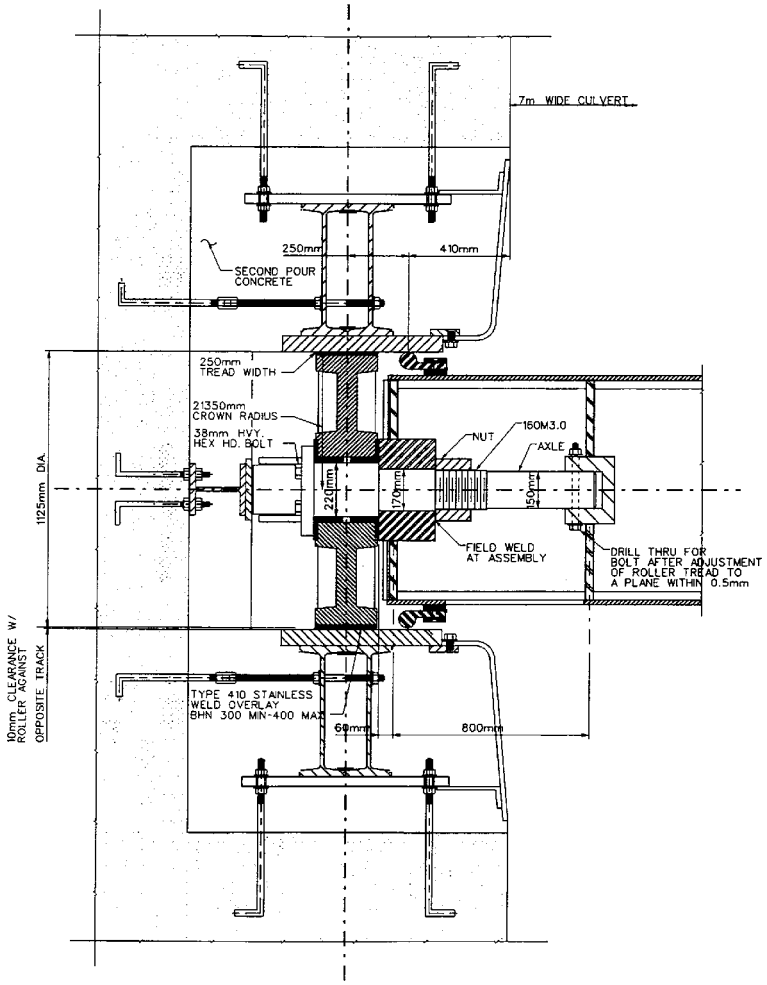
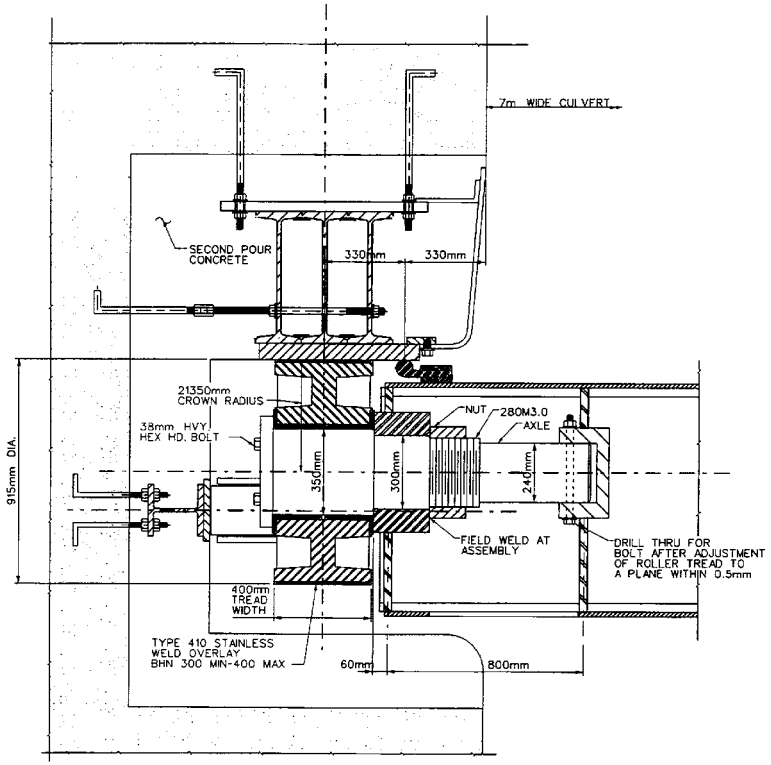
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
VALVE OPERATING MACHINERY
CULVERT AND CONDUIT VALVES
FIXED WHEEL ASSEMBLIES

Drawing Number: ACP-R-25/3



CONDUIT VALVE ROLLER ASSEMBLY

SCALE: 1:10



CULVERT VALVE ROLLER ASSEMBLY

SCALE: 1:10

AXLE CENTERS ARE ECCENTRIC TO THE ROLLER BEARING CENTERS BY 4 mm. TO PROVIDE FOR ADJUSTMENT IN THE PLANE OF THE ROLLER TREADS. WITH NUT LOOSE, ROTATE AXLE UNTIL ROLLER TREADS ARE IN A COMMON PLANE PLUS OR MINUS 0.5 mm. THEN TIGHTEN AND WELD NUT.

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE PRELIMINARY AND ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Designer by: R.P. WITTEN

ACP
AUTORIDAD DEL CANAL DE PANAMA

Chk by: JLF
Chd by: DLB
Submission Date: MAR 2003
Revision Date: X
WB NO.:

Date: Tuesday, 11 March 2003 12:57
Pen Scale: 2.000000:1.000000
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Symbol	Description	Date	Rev.
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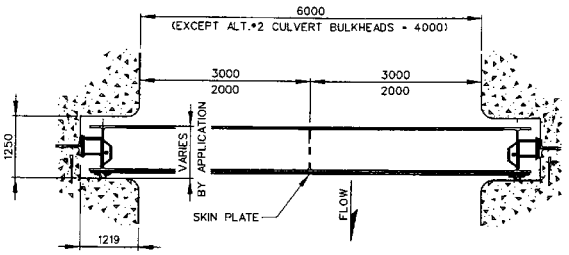
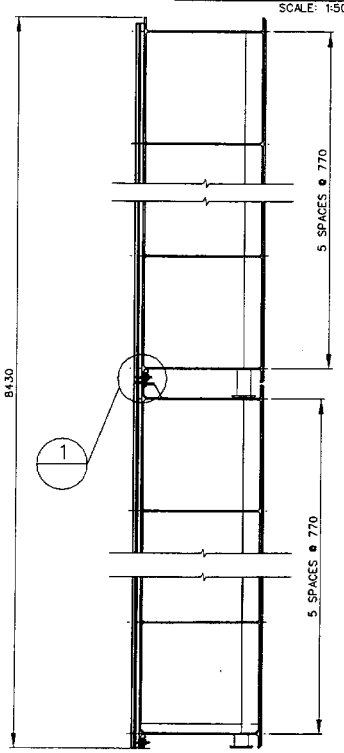
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
VALVE OPERATING EQUIPMENT
CULVERT AND CONDUIT VALVES
WHEEL ASSEMBLY - DETAILS

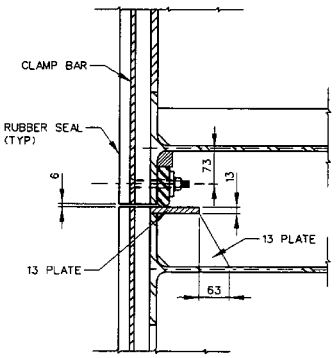
Drawing Number: ACP-R-25/4



SECTION THRU RECESS
SCALE: 1:50



SECTION A
SCALE: 1:20



DETAIL 1
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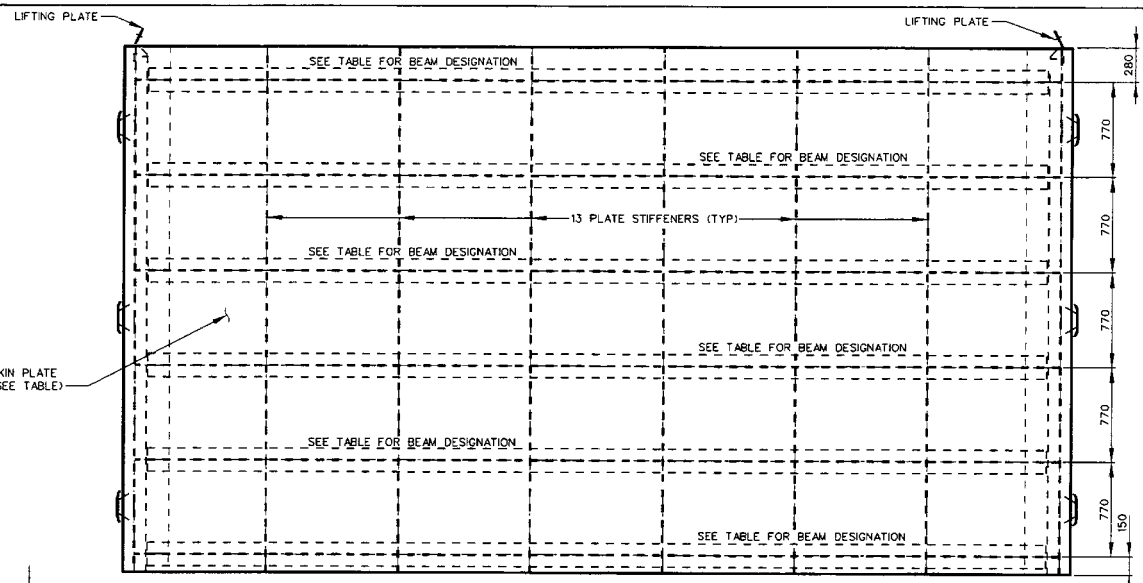
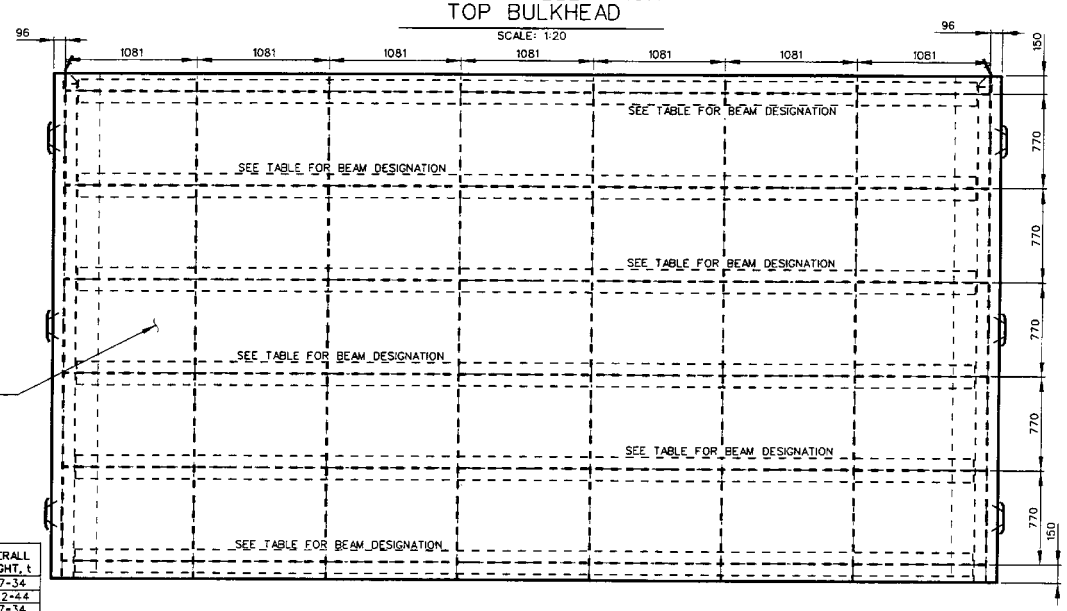


UPSTREAM ELEVATION
TOP BULKHEAD
SCALE: 1:20



UPSTREAM ELEVATION
BOTTOM BULKHEAD
SCALE: 1:20

BULKHEAD APPLICATION	CULVERT SIZE	SKIN PL THICKNESS	BEAM	No. OF DIAPHRAGMS	OVERALL WEIGHT, t
ALT. #1					
UPPER & LOWER CULVERT VALVE BULKHEAD	6x8	15	W920x201	6	2@17-34
CENTER CULVERT BULKHEAD	6x8	18	W920x313	6	2@22-44
UPPER & LOWER LOCK CONDUIT VALVE BULKHEADS	6x8	15	W920x201	6	2@17-34
ALT. #2					
CULVERT VALVE BULKHEAD	4x7	12	W760x147	4	2@15-30
CONDUIT VALVE BULKHEAD	6x7	12	W920x201	6	2@16-32

NOTE: BULKHEADS FOR THE 6x8 CULVERTS SHOWN, BULKHEADS FOR THE 4x7 CULVERTS ARE SIMILAR.

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Prepared by: W.A.HARKNESS
Checked by: JFT
Reviewed by: RAA
Submission Date: MAR 2003
Revision Date: X

ACP
ALTUGARDIAN INTL CANAL DE PANAMA

Date: Jackson
Date: 2/28/2003 12:37
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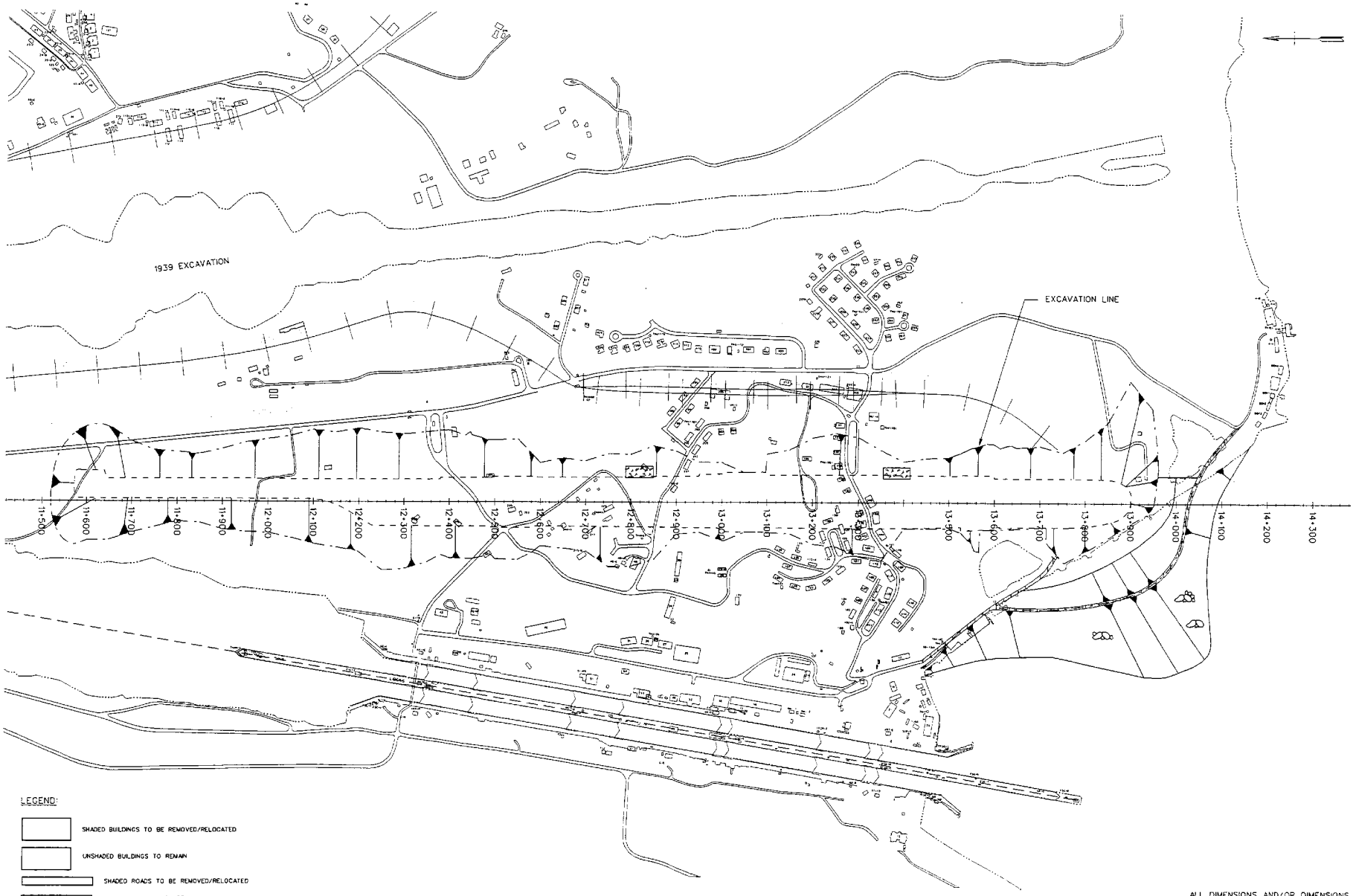
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
CONDUIT & CULVERT BULKHEADS
ELEVATIONS & SECTIONS

Drawing Number: ACP-R-34/1



LEGEND:

- SHADED BUILDINGS TO BE REMOVED/RELOCATED
- UNSHADED BUILDINGS TO REMAIN
- SHADED ROADS TO BE REMOVED/RELOCATED
- UNSHADED ROADS TO REMAIN
- NEW ROADS

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:4000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: T. SHILLEY, P.E.
Dwn by: DJM
Ckd by: TS
Submission Date: MAR 2003
Revision Date: X
IFB NO.:
Sheet X of X

ACP
AUTORIDAD DEL CANAL DE PANAMA
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Date: 31-MAR-2003 09:23
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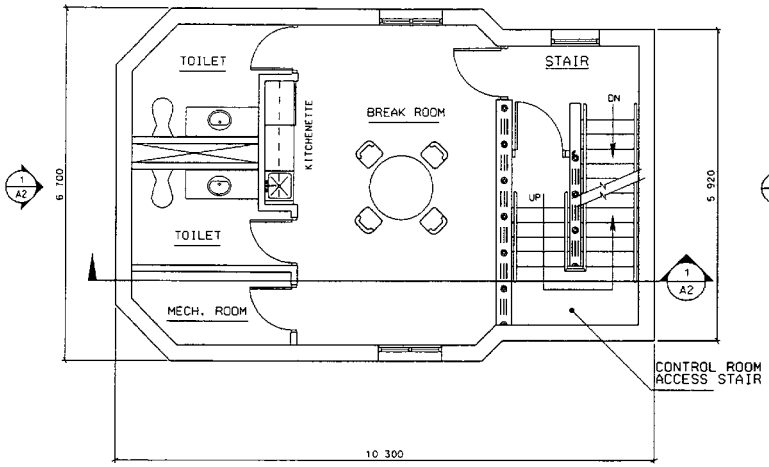
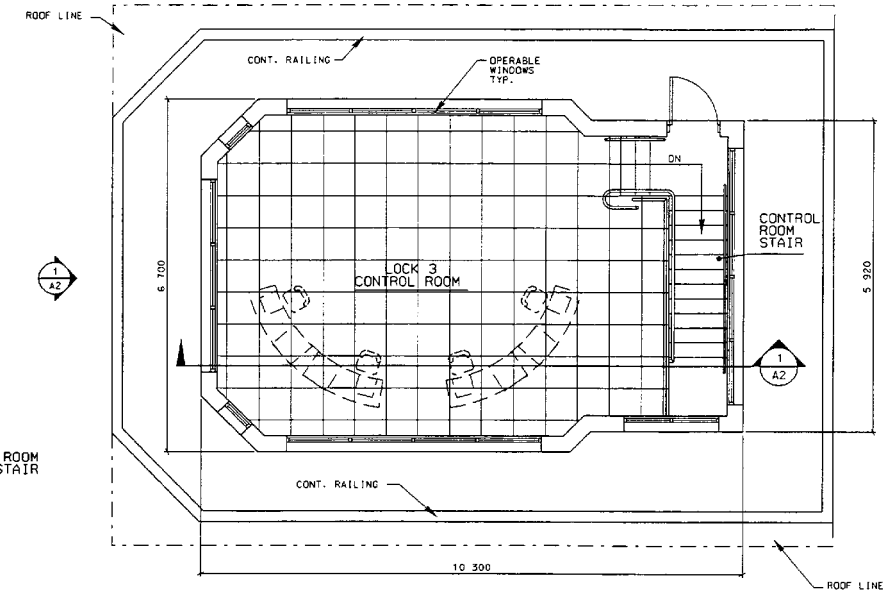
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
ACCESS ROADS & BUILDING RELOCATIONS

Drawing Number: ACP-R-68/1



BREAK AREA PLAN
LEVEL 2



LOCK 3 CONTROL ROOM PLAN
LEVEL 3

SPACE ANALYSIS

LEVEL 1 – REMOTE OPERATIONS

REMOTE OPERATIONS: 41 SQ. METERS

LEVEL 2 – BREAK AREA

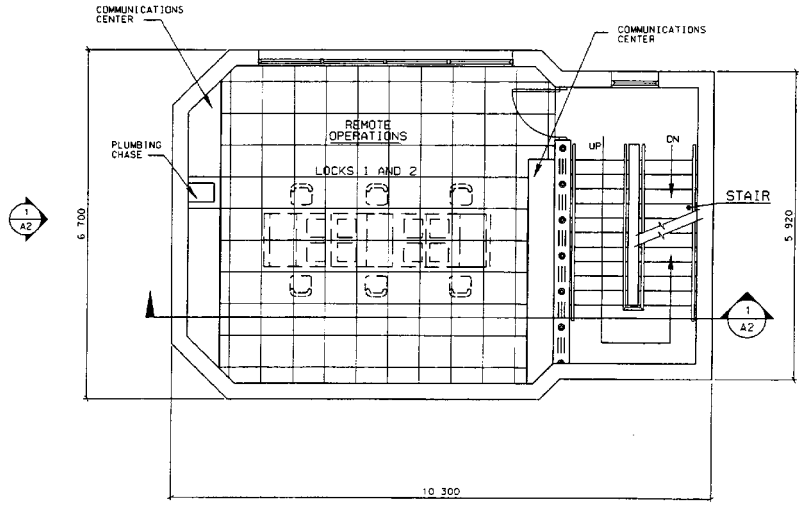
TOILETS:	10 SQ. METERS
MECH. RM.:	4 SQ. METERS
BREAK RM.:	24 SQ. METERS

LEVEL 3 – LOCK 3 CONTROL ROOM

CONTROL ROOM: 49 SQ. METERS

STAIRS

3 LEVELS: 32 SQ. METERS



BREAK AREA PLAN
LEVEL 1

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
Design by: N. BALLARD
Drawn by: CM
Checked by: WAH
Submission Date: MAR 2003
Revision Date:
Sheet X of X

ACP
ATLANTIC DIVISION BALLAPAL DEL PANAMA
User: jackauh
Date: 28-MAR-2003 13:49
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Plot Date:
Color Table

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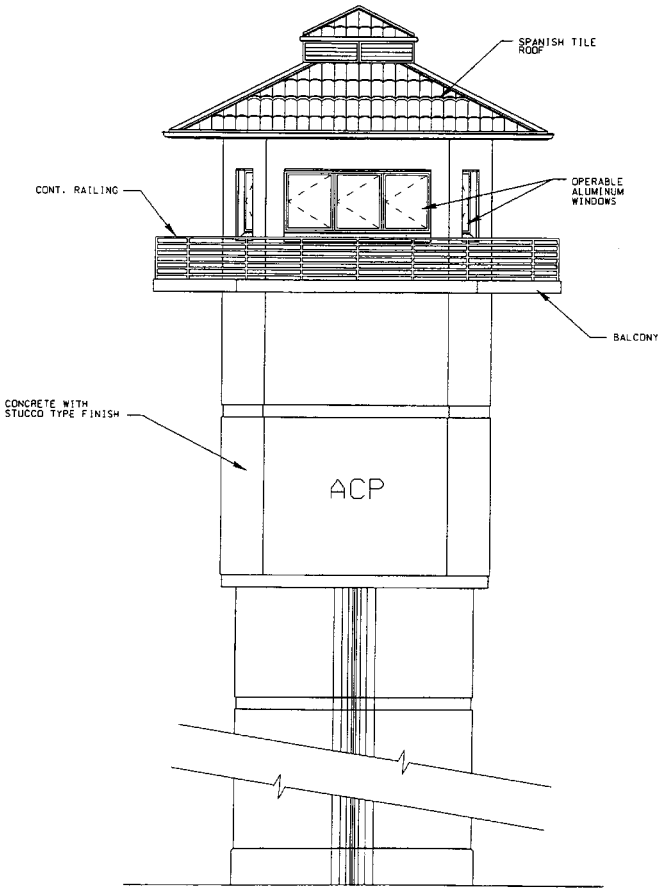
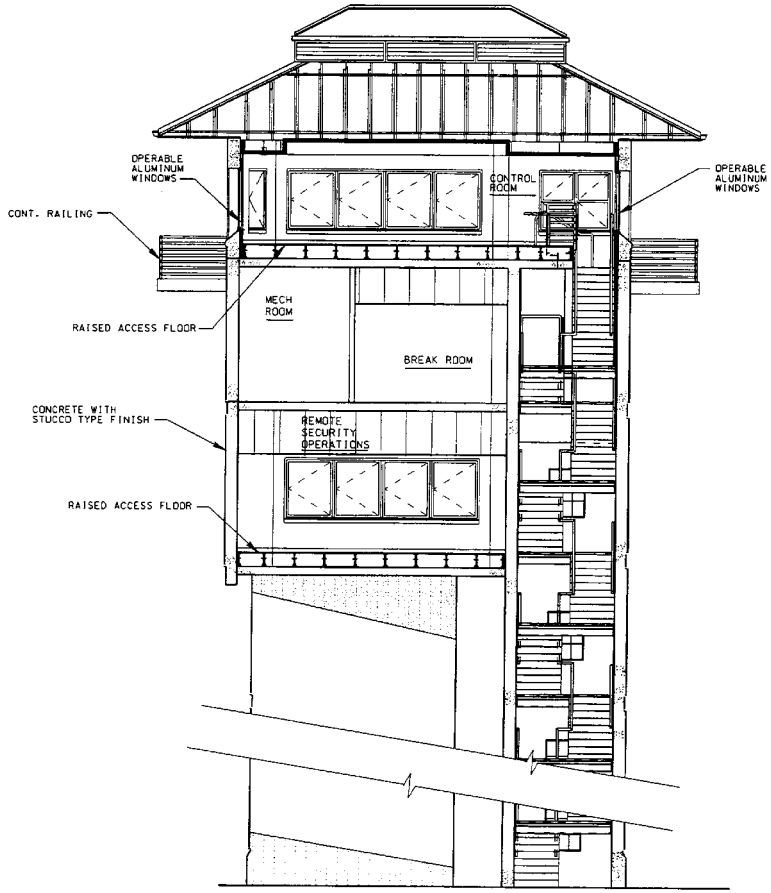
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
COMMUNICATION CONTROL CENTER
CONTROL TOWER - FLOOR PLANS

Drawing Number: ACP-R-70/1



ELEVATION



SECTION

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Design by: N. BALLARD

Dwn by: CM | Ckd by: WAH

Submission Date: MAR 2003 | Revision Date: X

IFB NO.:

Sheet X of X

ACP AUTORIDAD DEL CANAL DE PANAMA

User: jamkosh
Date: 28 MAR 2003 12:58
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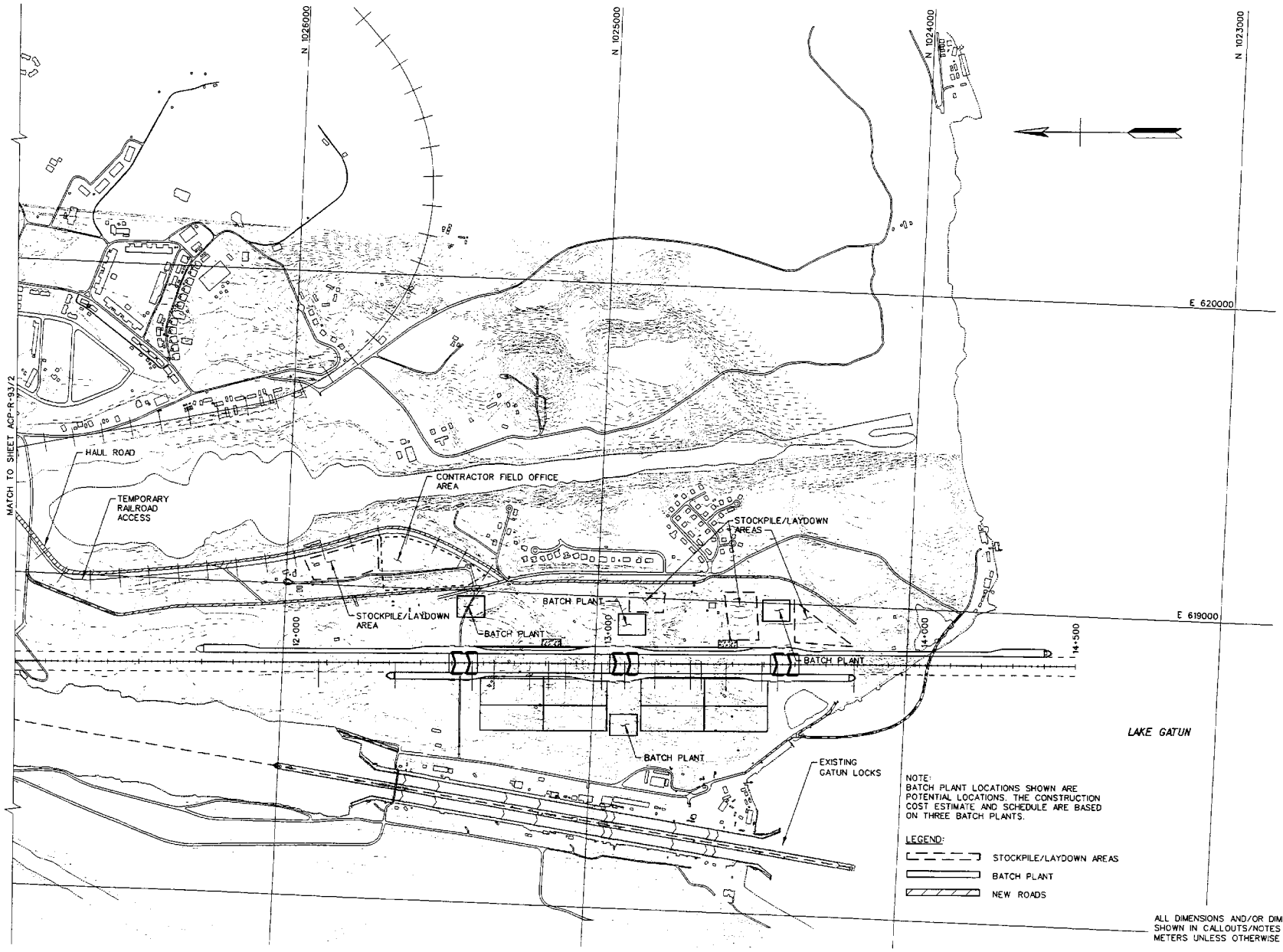
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
COMMUNICATION CONTROL CENTER
ELEVATION AND SECTION

Drawing Number: ACP-R-70/2



NOTE:
BATCH PLANT LOCATIONS SHOWN ARE POTENTIAL LOCATIONS. THE CONSTRUCTION COST ESTIMATE AND SCHEDULE ARE BASED ON THREE BATCH PLANTS.

LEGEND:

- STOCKPILE/LAYDOWN AREAS
- BATCH PLANT
- NEW ROADS

ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:6000

US Army Corps of Engineers
Pittsburgh District

ACP
AUTORIDAD DEL CANAL DE PANAMA

Design by: C. CARNEY
Dwn by: DJM
Ckd by: CC
Submission Date: MAR 2003
Revision Date: X
Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD
FB NO.:
Sheet 1 of 2

Symbol	Description	Date	Appr.
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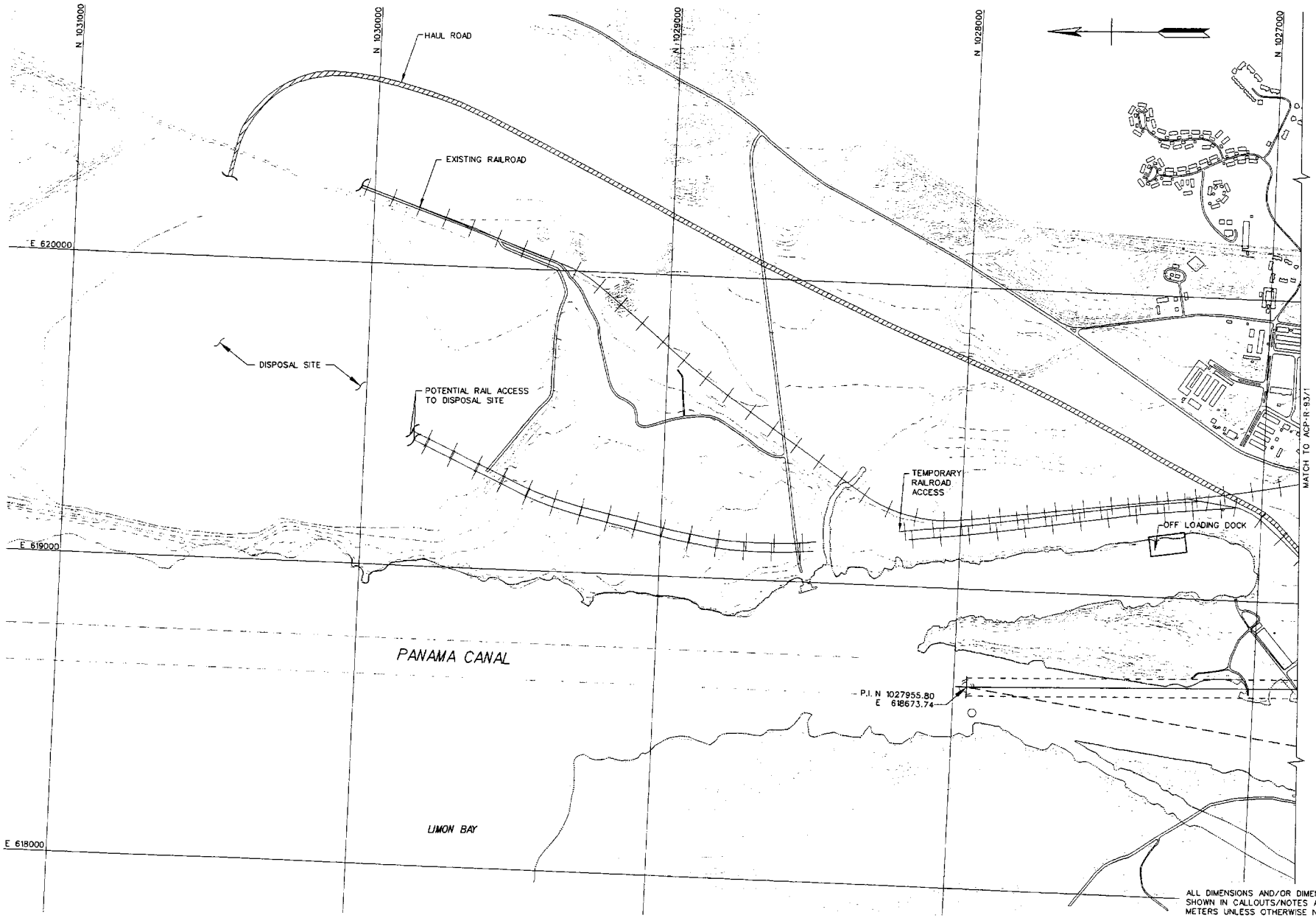
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
TEMPORARY CONSTRUCTION
PART 1 - DETAILED SITE PLAN

Drawing Number: ACP-R-93/1



ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:6000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet 2 of 2

Design by: C. CARNEY
Dwn by: DJM
Ckd by: CC
Submission Date: MAR 2003
Revision Date: X
IFB NO.:

ACP
AUTORIDAD DEL CANAL DE PANAMA

User: jlankash
Date: 28-MAR-2003 12:58
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Color Table

Symbol	Description	Date	Appr.
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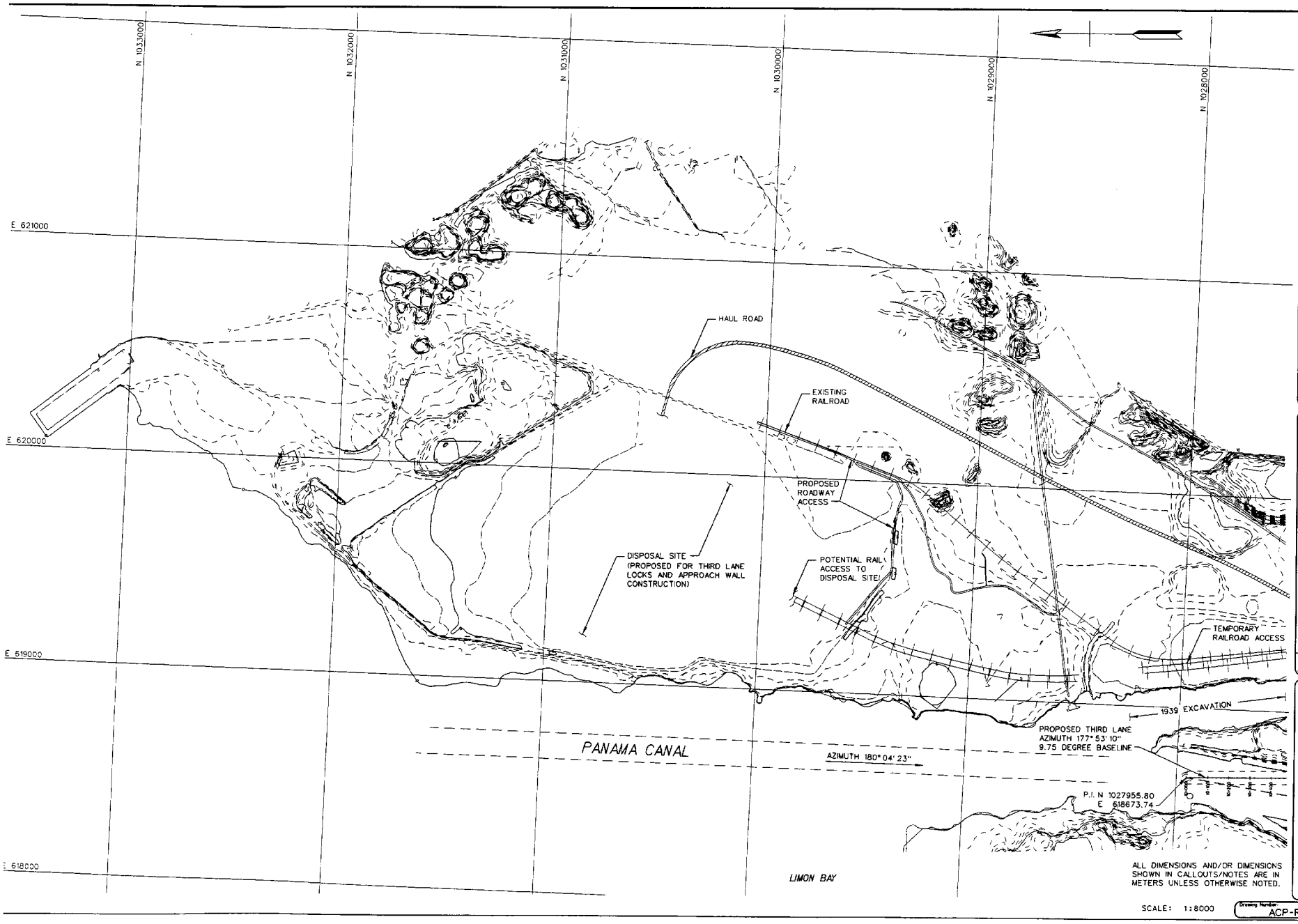
PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCK
TEMPORARY CONSTRUCTION
PART 2 - DETAILED SITE PLAN

Drawing Number: ACP-R-93/2



ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN METERS UNLESS OTHERWISE NOTED.

SCALE: 1:8000

US Army Corps of Engineers
Pittsburgh District

Submitted by: W.A. HARKNESS, P.E. TECHNICAL LEAD

Sheet X of X

Design by: SHILLEY\IERA
Dwn by: DJM
Ckd by: TDS
Submission Date: MAR 2003
Revision Date: X
FB NO.:

ACP
AUTORIDAD DEL CANAL DE PANAMA
User: jlankash
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PANAMA CANAL
ATLANTIC LOCKS CONCEPT DESIGN
DOUBLE LIFT LOCKS
DISPOSAL AND LAYDOWN AREAS

Drawing Number: ACP-R-99/1