DESCRIPTION: Red hill Storage Facility Tank #13

INSPECTION DATES: June 26, 1995 to July 3, 1995

INSPECTION TIME: 7:00 am to 3:30 pm

AMAN ENVIRONMENTAL REPRESENTATIVE: Doug Fenstermacher

CONAM MMP REPRESENTATIVE: Leif Woodman

Clean 9 Tanks
RH

EXTENT OF INSPECTION:

1.Perform inspection on the bottom interior of the tank.
2. Perform leak testing on the floor and the first course.
3. Perform ultrasonic thickness testing on the floor and the first course.
4. Inspections performed to applicable API 653 criteria.

RESULTS OF SURVEY:

Floor:

1. A mild general corrosion was noted on the floor.
2. Minor scattered pitting was noted with a maximum of 0.15" noted on the ring on the bottom of the first course.
3. The coating had been mostly removed with some primer still remaining.
4. No leaks were detected on the plates.

First Course:

1. A mild general corrosion was noted on the plates.
2. Mild scattered pitting was noted. The maximum pit depth noted was .11".
3. The coating had been removed from the bottom six feet of the course.
4. The remaining coated area was moderately blistered with some of the blisters having been popped.
5. No leaks were detected on the plates.

Second Course:

1. There was moderate blistering at the bottom of the course which decreased toward the top of the course.
2. There were no leaks detected on the plates.
3. The course was inspected from the top of the first course.

RECOMMENDATIONS:

1. Patch the deepest pits on the first course.
2. Repair the holes in the coating.
3. Recoat the area that had the coating removed.
4. Monitor the pitting for further growth.

CONAM MMP INSPECTIONS:

Leif Woodman
API 653 #1059

AMAN REPRESENTATIVE:

Inspections, Inc.

VACUUM LEAK TEST REPORT

INSPECTION DATE 6-30-95 TIME 1530 ITEM DESCRIPTION Tank #13

CUSTOMER Aman Environmental JOB LOCATION/ADDRESS Red Hill tank farm

BILLING ADDRESS _____ CITY _____ STATE Hawaii

P.O. NO. _____ JOB NO. _____

CONTACT Doug Feasternacher PHONE NO. _____ TEST SPECIFICATIONS Asme Sect V Art 10

ACCEPTANCE STANDARDS No Emissions permitted

METHOD USED:

2. BUBBLE ☒ i. DIRECT ☐ 100% INSP. X SPOT INSP. _____

ii. VACUUM ☒ CUSTOMER INFO _____

PROC. NO. map-tp-vt-001 REV. NO. 1

SURFACE CONDITION Bare steel / coated after 6' up on 1st course
(MUST BE THOROUGHLY CLEAN)

TEST USED: Vacuum box bubble emission SURFACE TEMP.: 80° F

BUBBLE SOLUTION: Snoop Solution VACUUM SOURCE: Air Ejector

SOAK TIME: 15 seconds VACUUM PSI (3 PSI) 5-25 in Vacuum

APPLICATION: FLOWING ☐ SPRAYING ☐ BRUSHING ☒

VACUUM BOX SIZE: 8"x36" - 9"x13" - 4"x6" - 4"x9" - 4"x13" - 6"x6"x7"

PRESSURE RETENTION TIME, (15 SEC.): 15 Seconds minimum

IDENT. NO.	ACCEPT	REJECT	GRADE	INTERPRETATION	REMARKS
1st Course Welds	X			No relevant indications	
ring at top of 1st course	X			" " "	
1st Course patch plates				" " "	
ring at Btm of 1st course				" " "	
floor Btm welds				" " "	
Nozzle repads to floor				" " "	
Nozzles to repads				" " "	
Angle iron legs				" " "	
tug points (pad eyes)				" " "	
floor patch plates				" " "	

SKETCH HERE OR ___ SEE ATTACHED

ATTACHMENT ☐ YES ☐ NO

EXAMINED BY: _____

DATE: 6-30-95

Inspections, Inc.

VACUUM LEAK TEST REPORT

INSPECTION DATE 6-30-95 TIME 1530

CUSTOMER Amoco Environmental

BILLING ADDRESS _____

P.O. NO. _____ JOB NO. _____

CONTACT Doug Feinstermacher PHONE NO. _____

ITEM DESCRIPTION Tank #13

JOB LOCATION/ADDRESS Red Hill tank farm

CITY _____ STATE Hawaii

TEST SPECIFICATIONS Asme Sect V Art 10

ACCEPTANCE STANDARDS No emission permitted

100% INSP. X SPOT INSP. _____

CUSTOMER INFO _____

PROC. NO. mmp-tp-lt-001 REV. NO. 1

METHOD USED:

2. BUBBLE ☒ i. DIRECT ☐

ii. VACUUM ☒

SURFACE CONDITION Base steel / Coated after 6' on 1st course
(MUST BE THOROUGHLY CLEAN)

TEST USED: Vacuum box bubble emission

BUBBLE SOLUTION: Snoop Solution

SOAK TIME: 15 Seconds

SURFACE TEMP.: 80° F

VACUUM SOURCE: Air Ejector

VACUUM PSI (3 PSI) 5-25 in Vacuum

APPLICATION: FLOWING ☐ SPRAYING ☐ BRUSHING ☒

VACUUM BOX SIZE: 8"x36" - 9"x13" - 4x6" - 4"x9" - 4"x13" - 6"x6"x7"

PRESSURE RETENTION TIME, (15 SEC.): 15 Seconds minimum

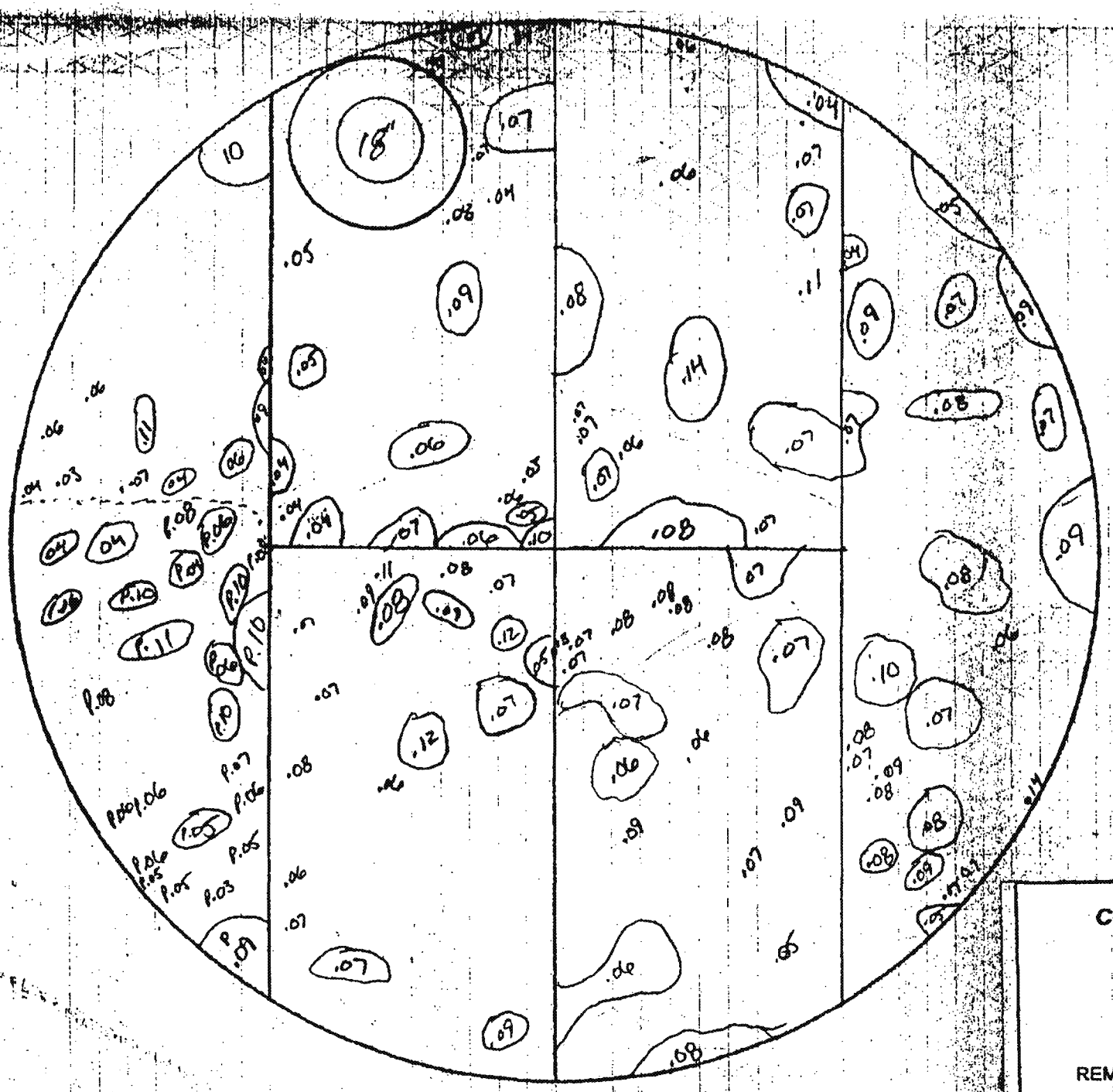
IDENT. NO.	ACCEPT	REJECT	GRADE	INTERPRETATION	REMARKS
tower repad welds				No relevant indications	
Angle iron brackets				" " "	
18" Nozzle supports				" " "	

SKETCH HERE OR ___ SEE ATTACHED

ATTACHMENT ☐ YES ☐ NO

EXAMINED BY: _____

DATE: 6-30-95



CONAM MMP INSPECTION INC

PROJECT: RED HILL TANK # 13

ITEM : FLOOR PITTING

BY: L. Woodman DATE: 7/3/95

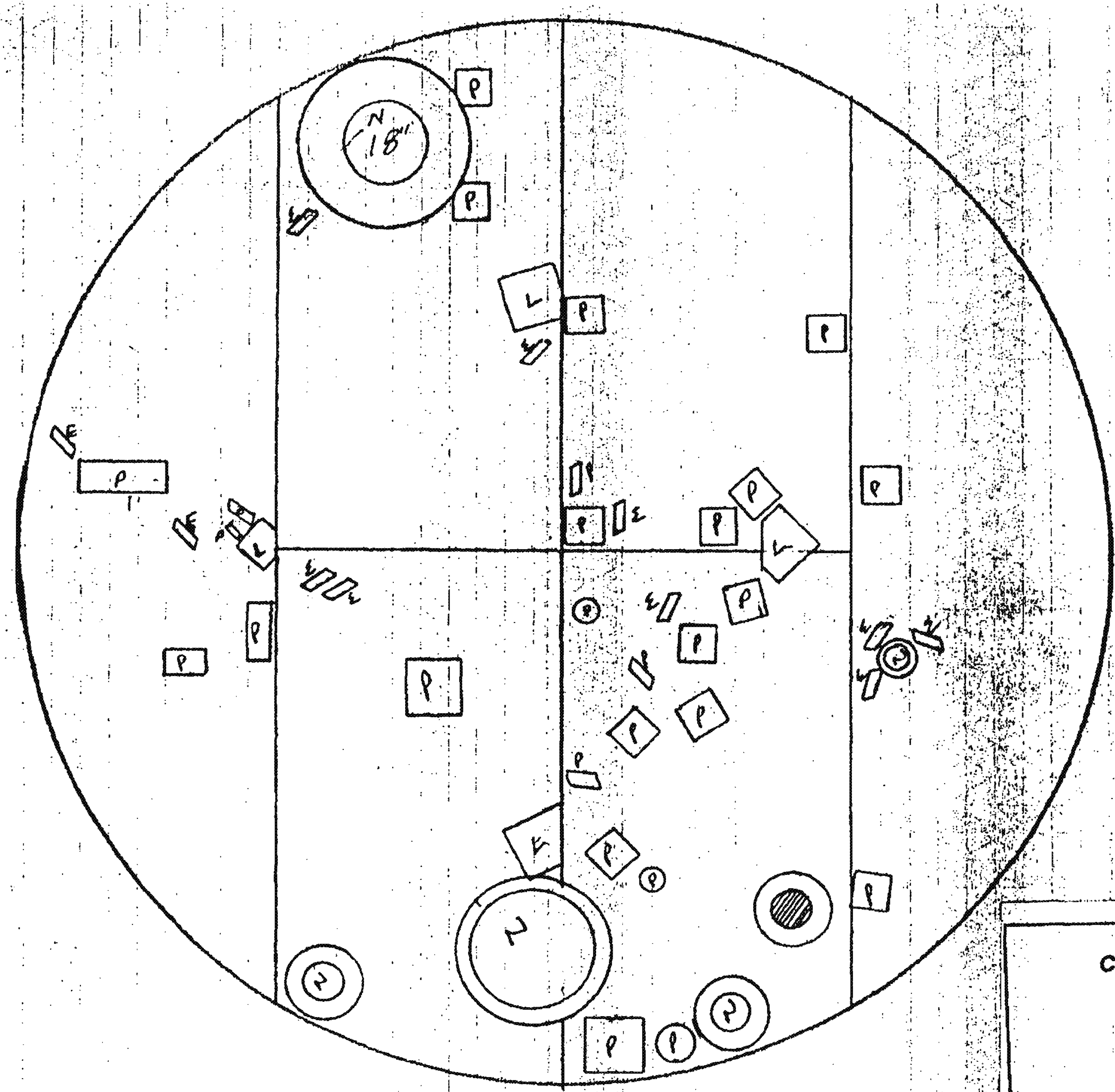
CLIENT: AMAN ENVIRONMENTAL

REMARKS:_____

M.M.P. Form No. 6P011 Rev. 2/92

Nº 5062

P - Patch
N - Nozzle
L - tower Leg
E - pad Eye

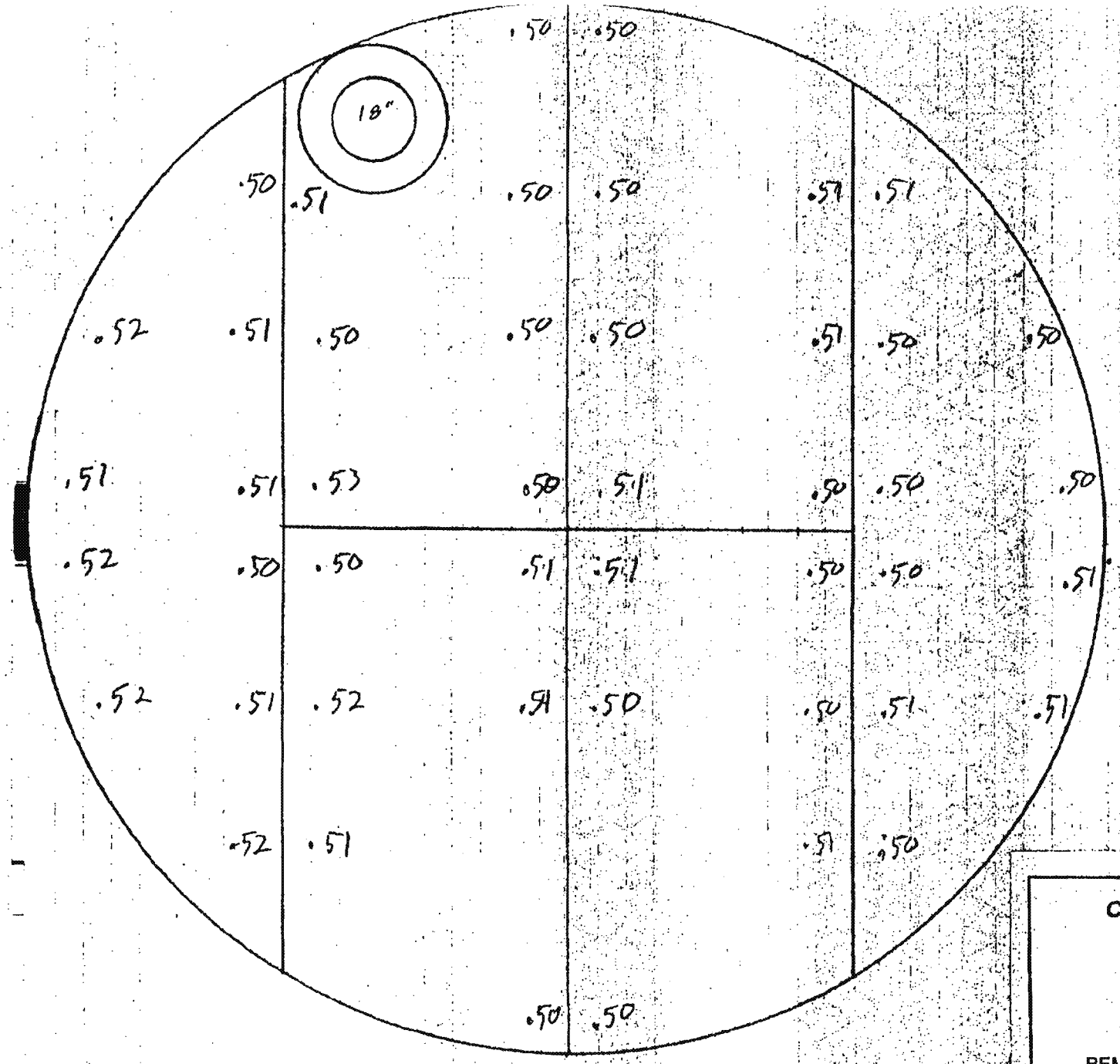


CONAM MMP INSPECTION INC

PROJECT: RED HILL TANK # 13
ITEM: FLOOR LAYOUT
BY:L. Woodman DATE: 7/3/95
CLIENT: AMAN ENVIRONMENTAL
REMARKS:__________

M.M.P. Form No. 0P011 Rev. 2/92

№ 5063



CONAM MMP INSPECTION INC

PROJECT: RED HILL TANK # 13
ITEM: **FLOOR THICKNESS**
BY: L. Woodman DATE: 7/3/95
CLIENT: AMAN ENVIRONMENTAL
REMARKS:_____

_____

P. Formoram No. 0P011 Rev. 2/92

Nº 5060

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BWS028693

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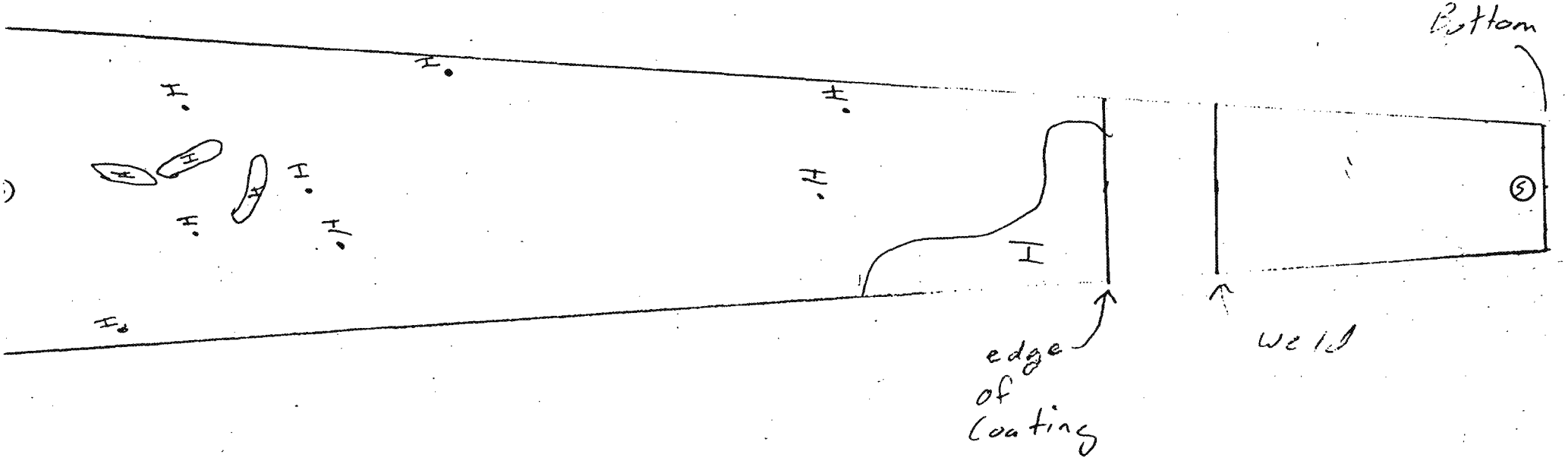

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

Holiday Test

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate # 1
BY:	L Woodman DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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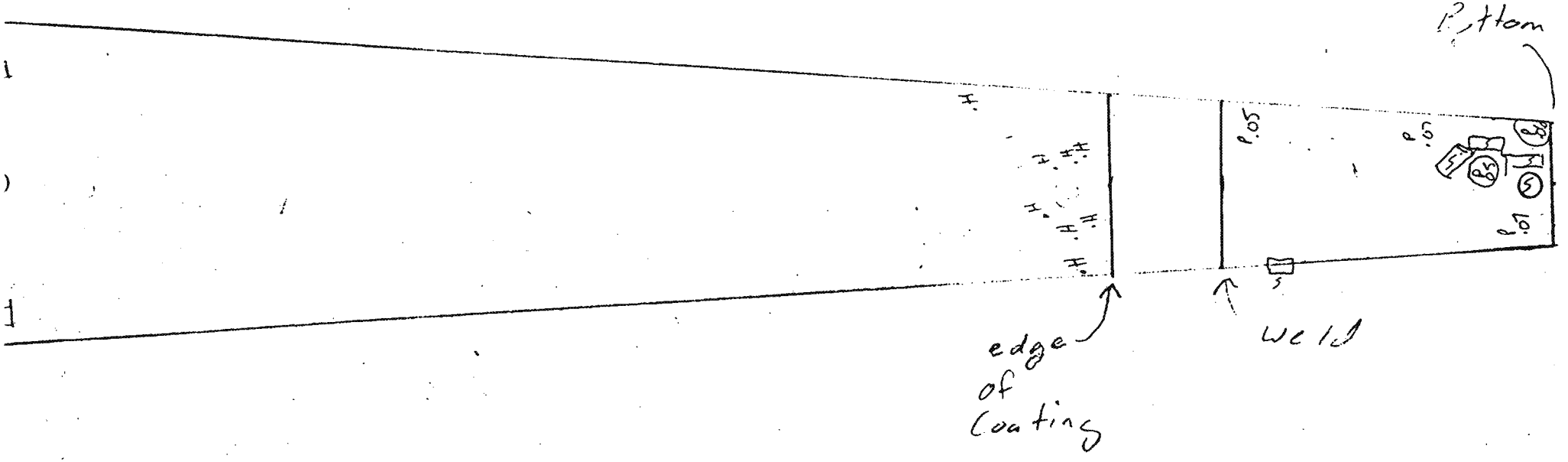

P - Pit
H - Hole in Coating
s - Surface patch
c - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #1	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

No 5061

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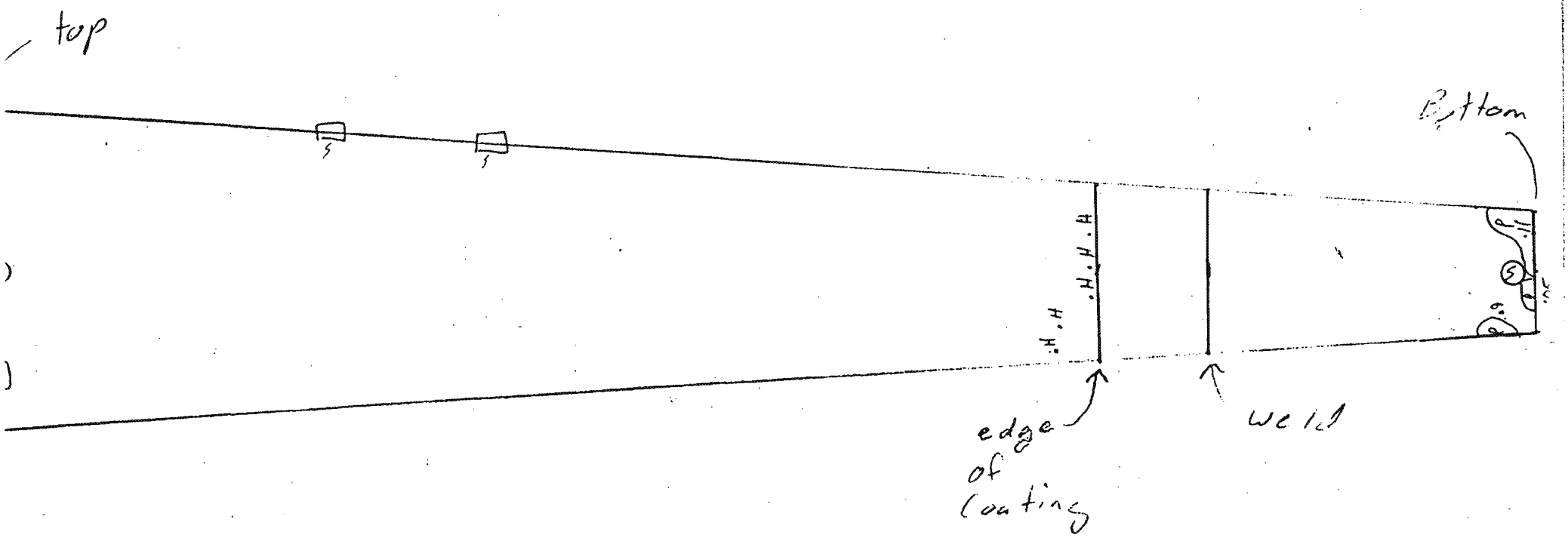

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310-597-3932
PROJECT: Red Hill tank 12	
ITEM: Plate #2	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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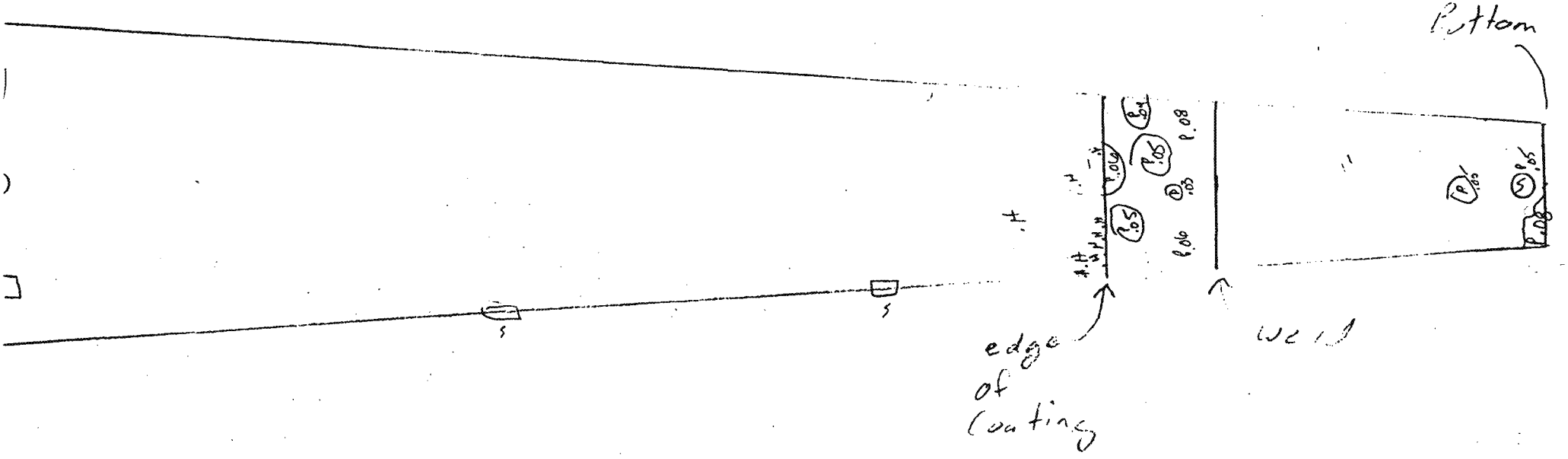

P - Pit
H - Hole in Coating
s - Surface patch
c - coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #3
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

No 5061

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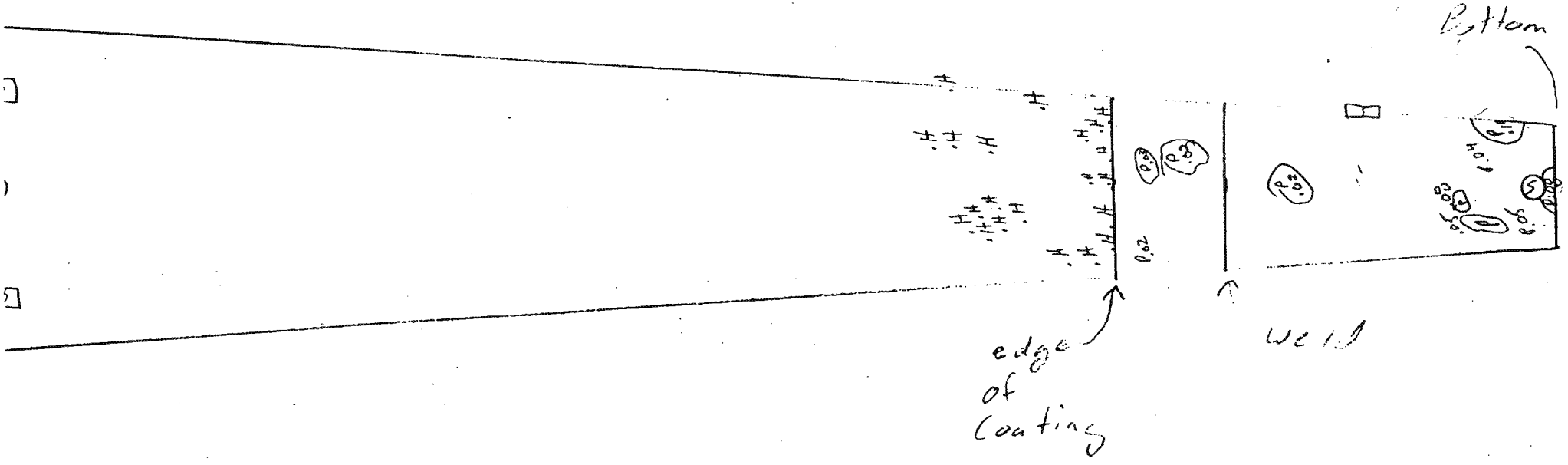

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310-597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate #4
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Aman Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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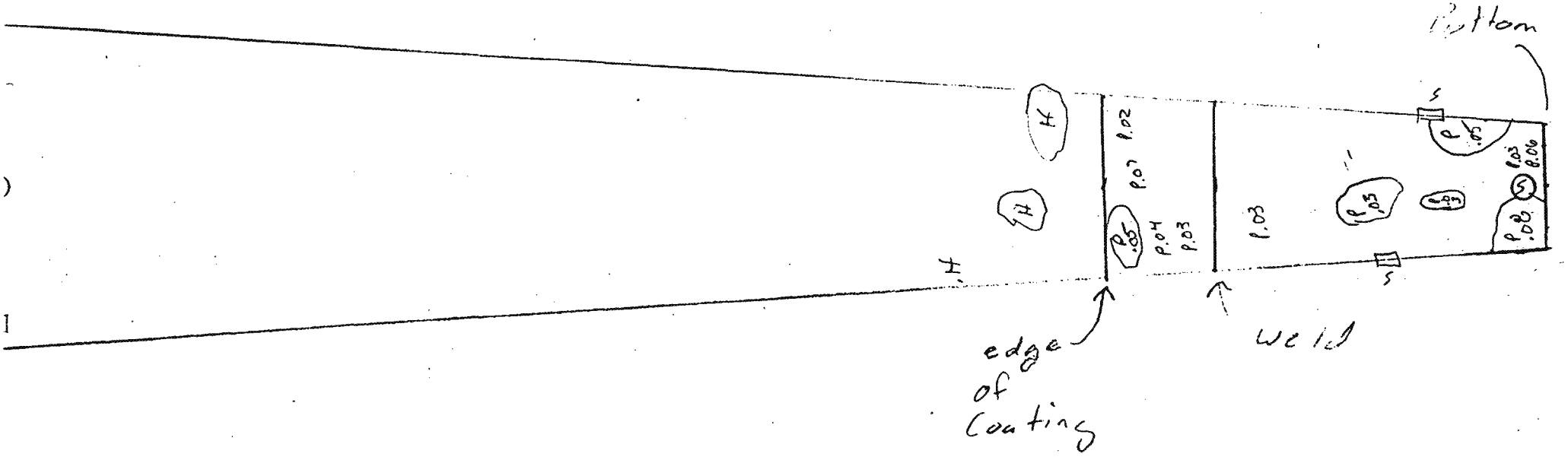


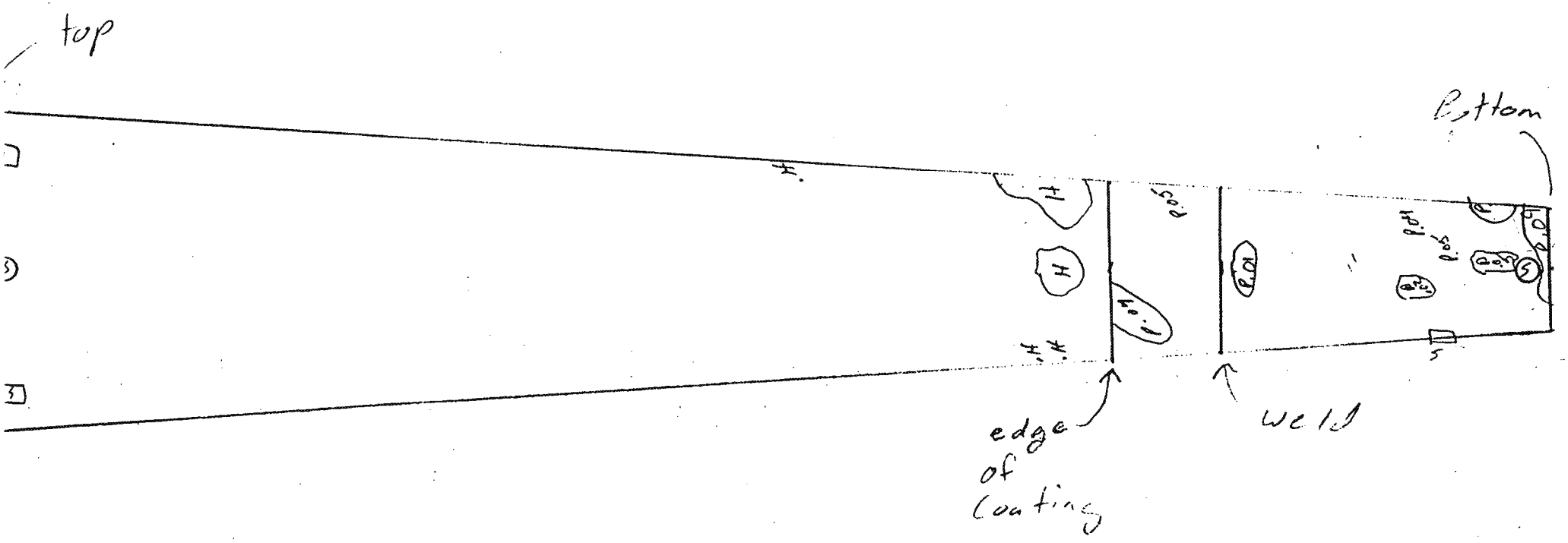
P - Pit
H - Hole in Coating
s - Surface patch
c - coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 19
ITEM: Plate #5
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310-597-3932

PROJECT: Red Hill tank 12
ITEM: Plate # 6
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET Of

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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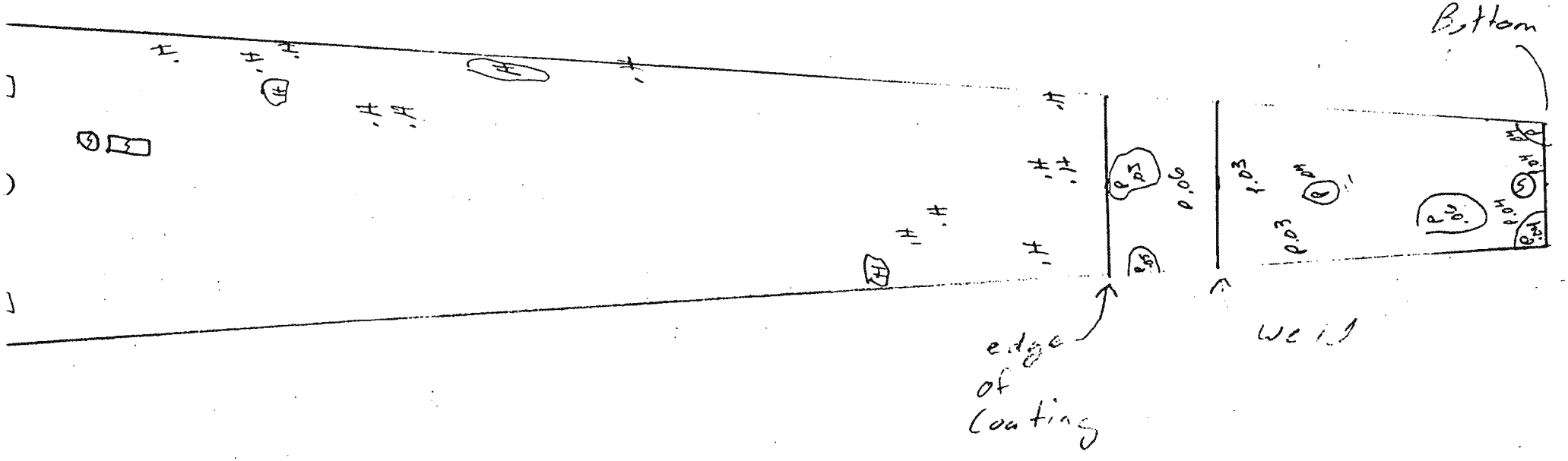

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #7
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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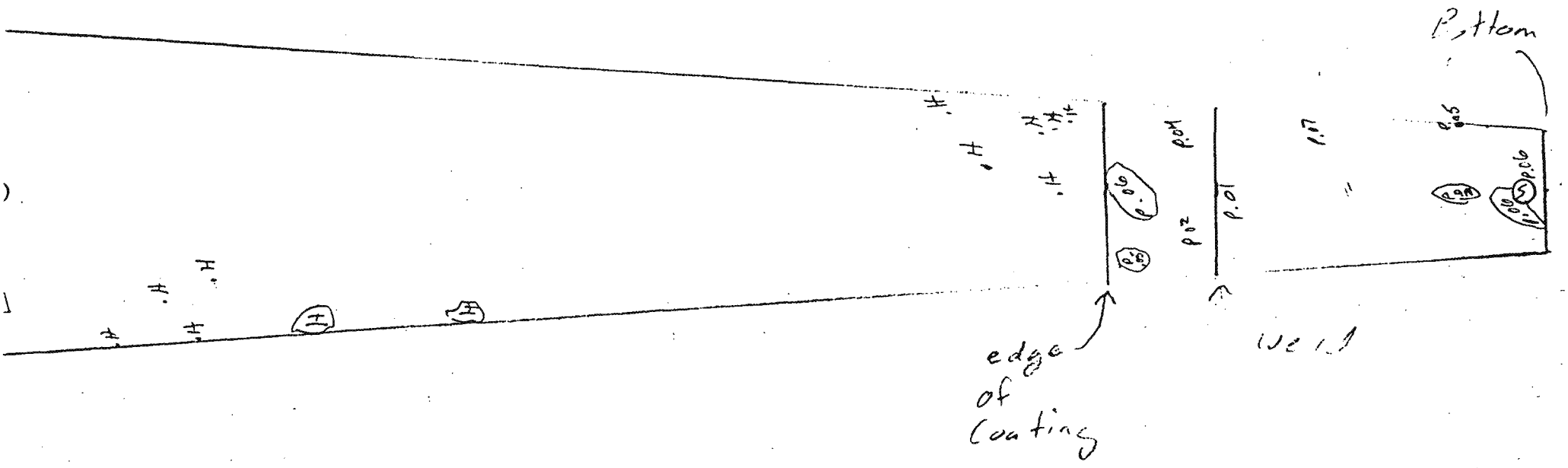
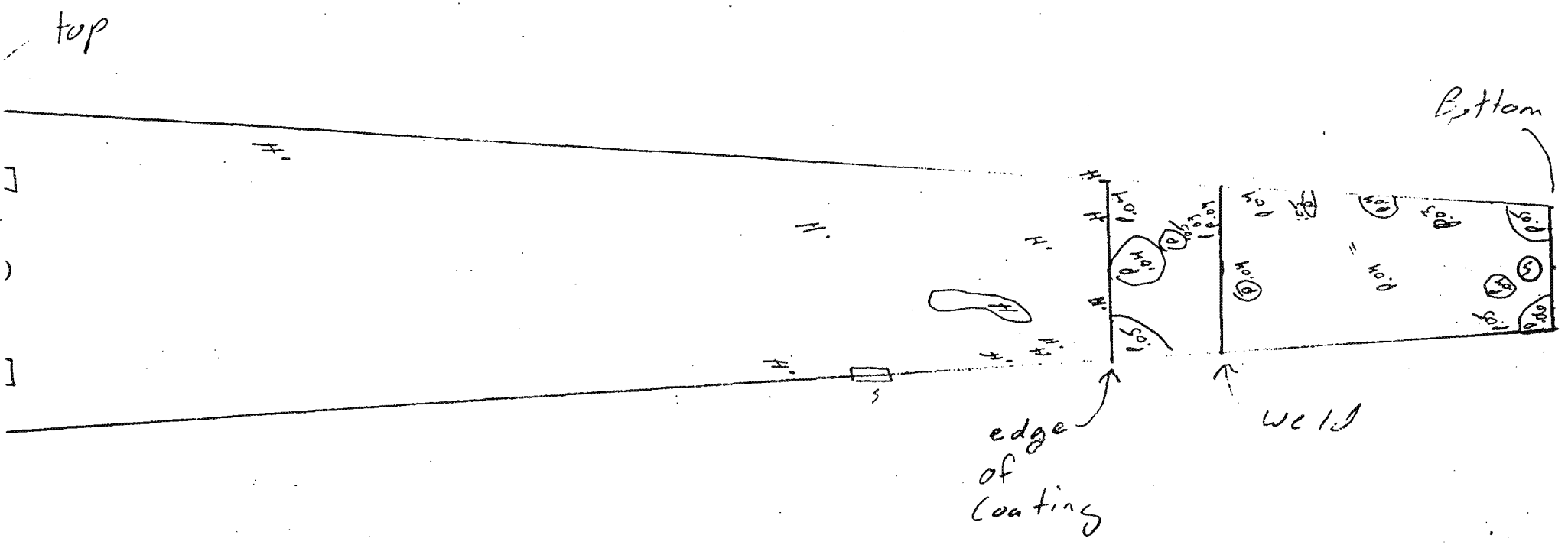


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #8	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

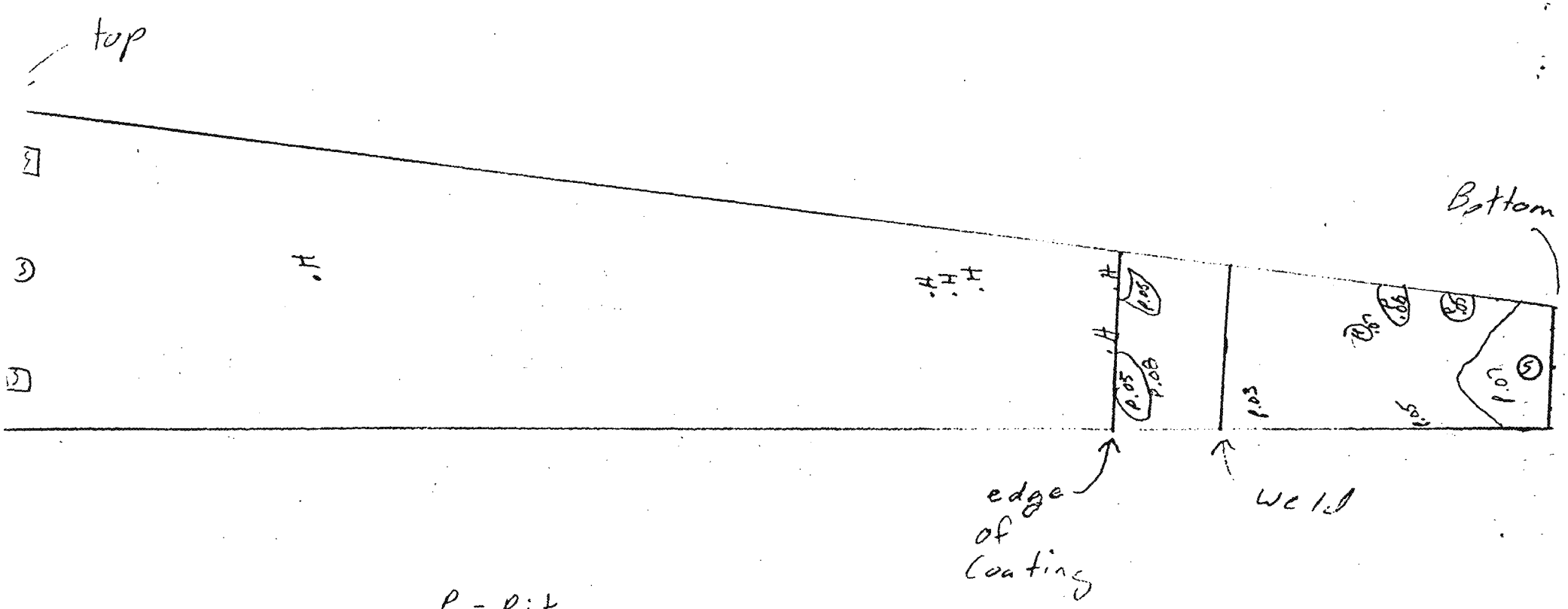


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate # 9	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061



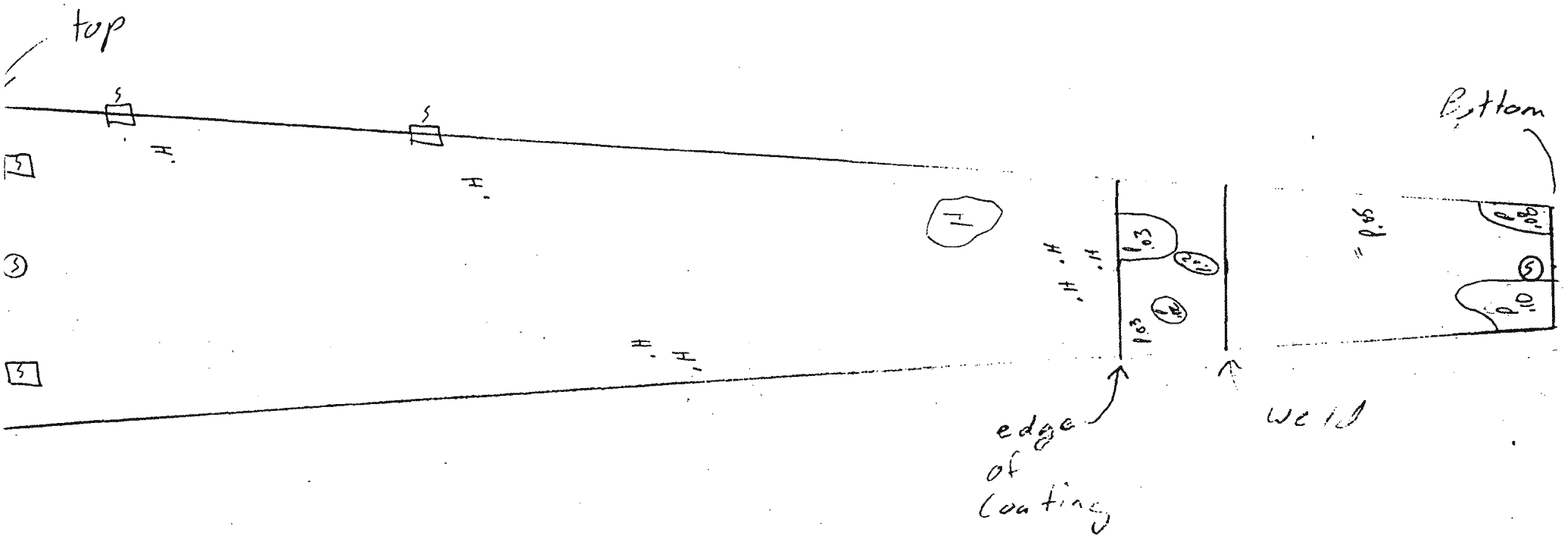
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #10
BY: L. Woodman
DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT:	Red Hill tank 13
ITEM:	Plate #11
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

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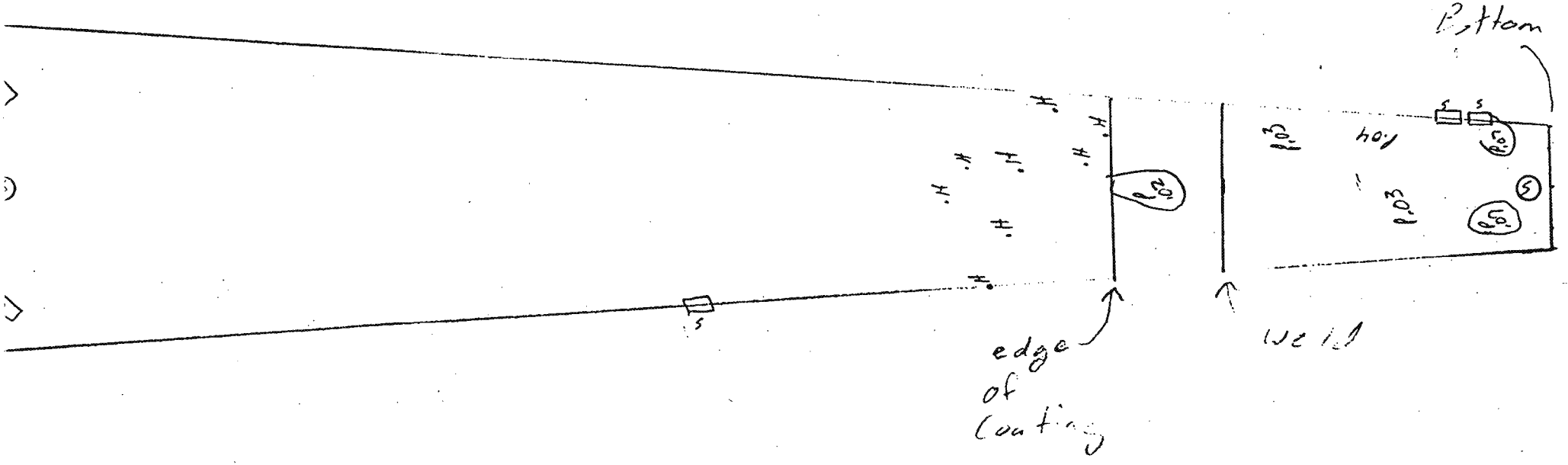

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310.597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #12
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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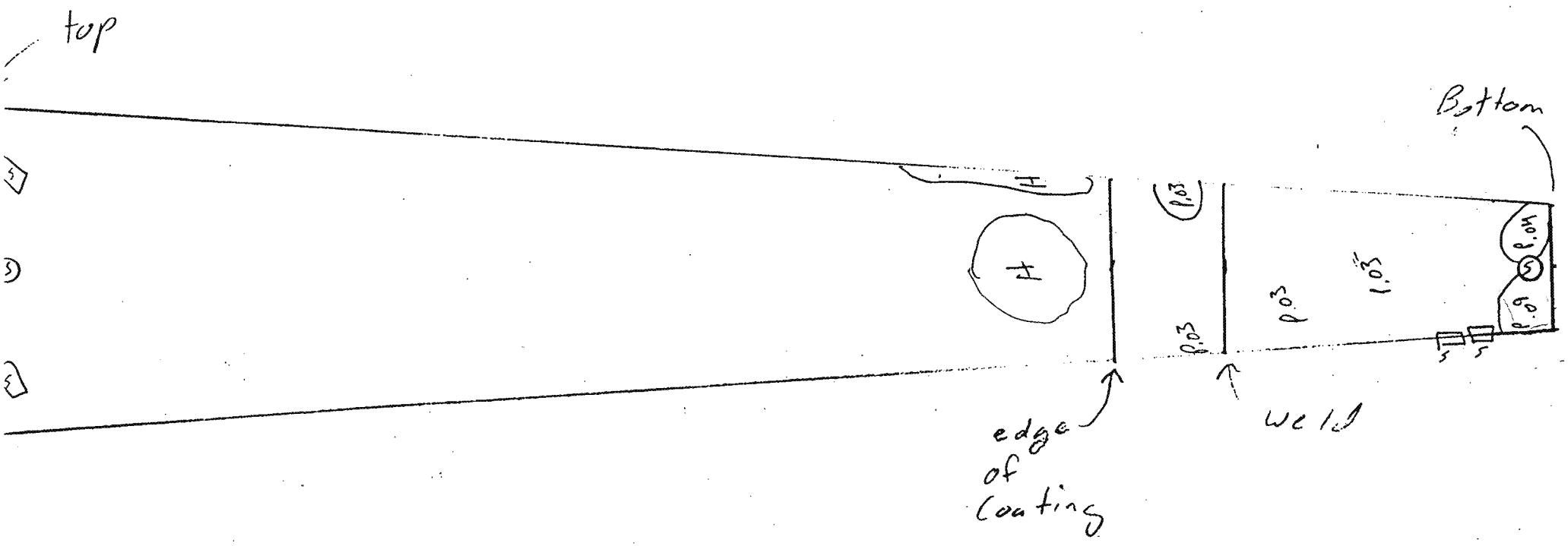

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 13
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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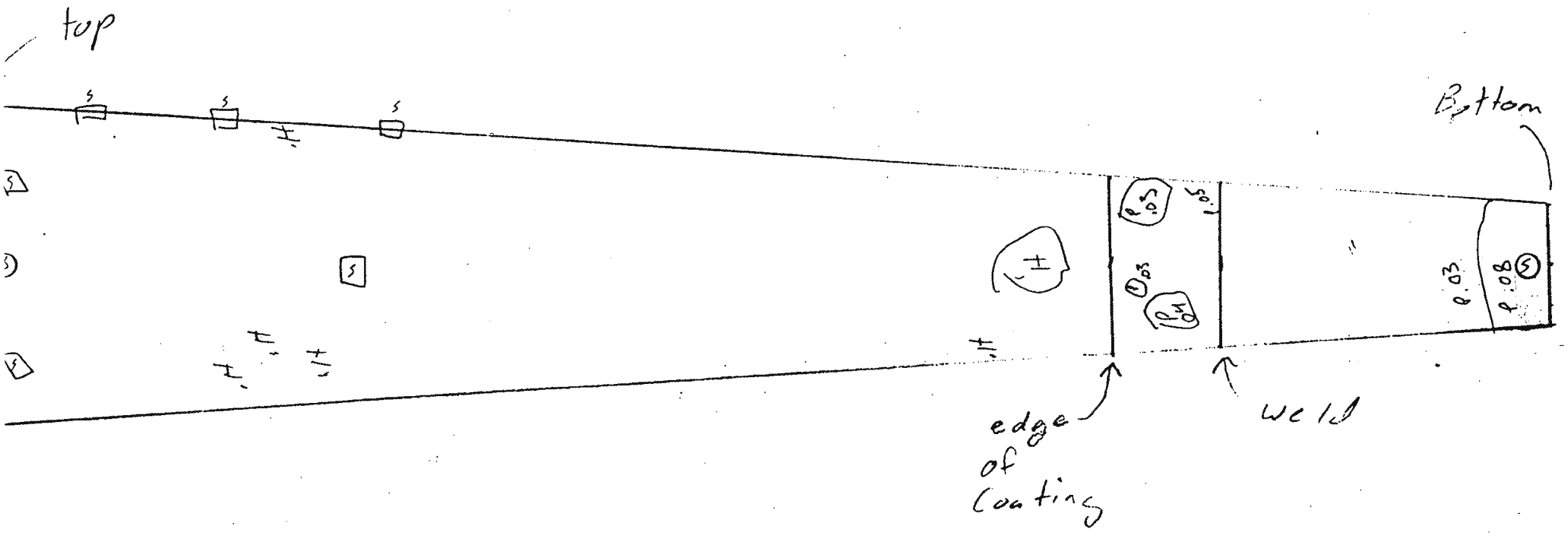

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #14
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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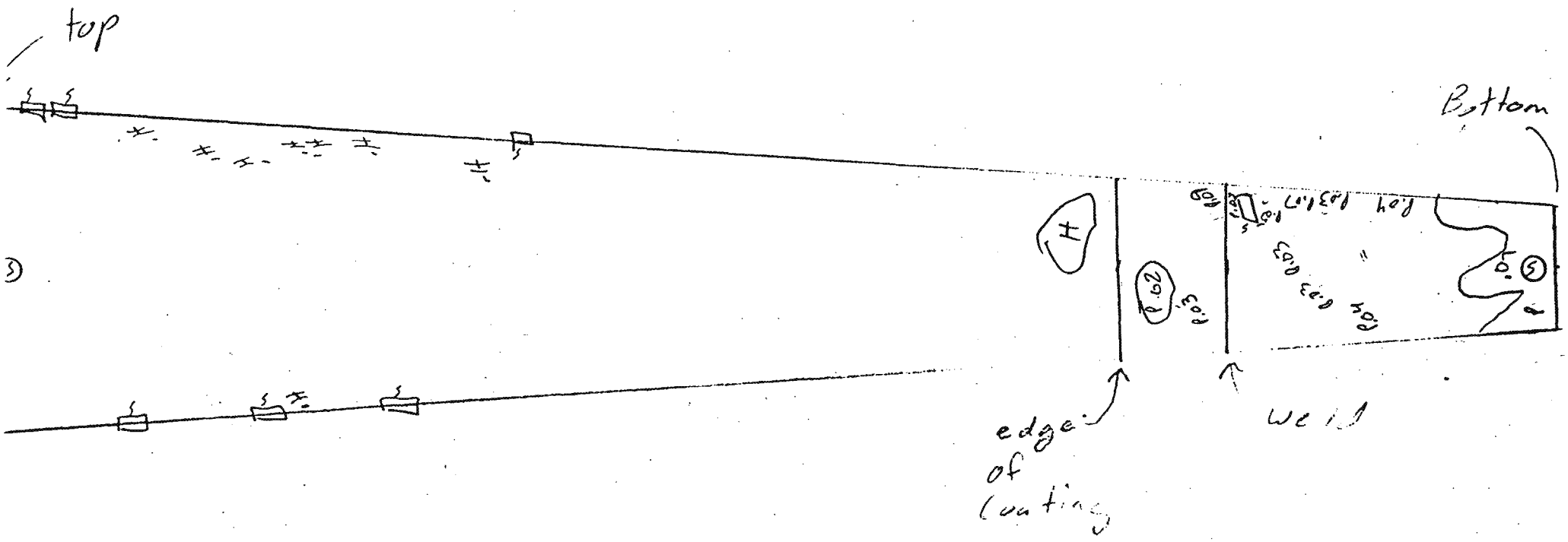

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate #15
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Aman Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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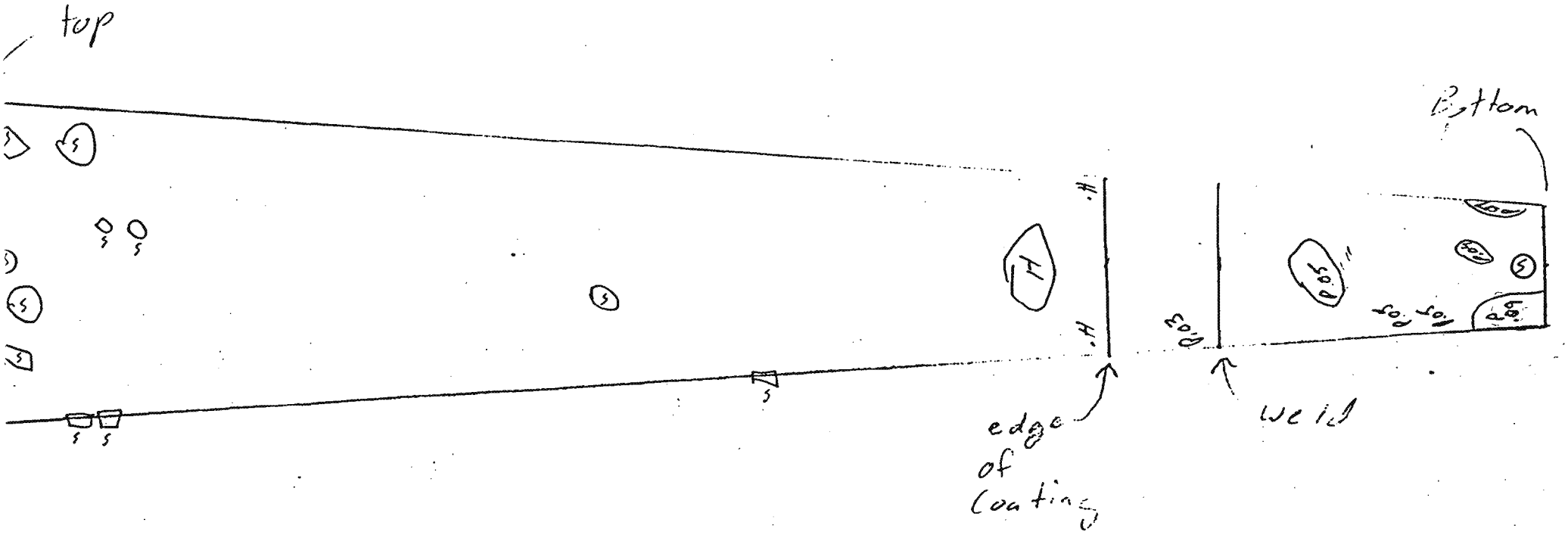

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #16
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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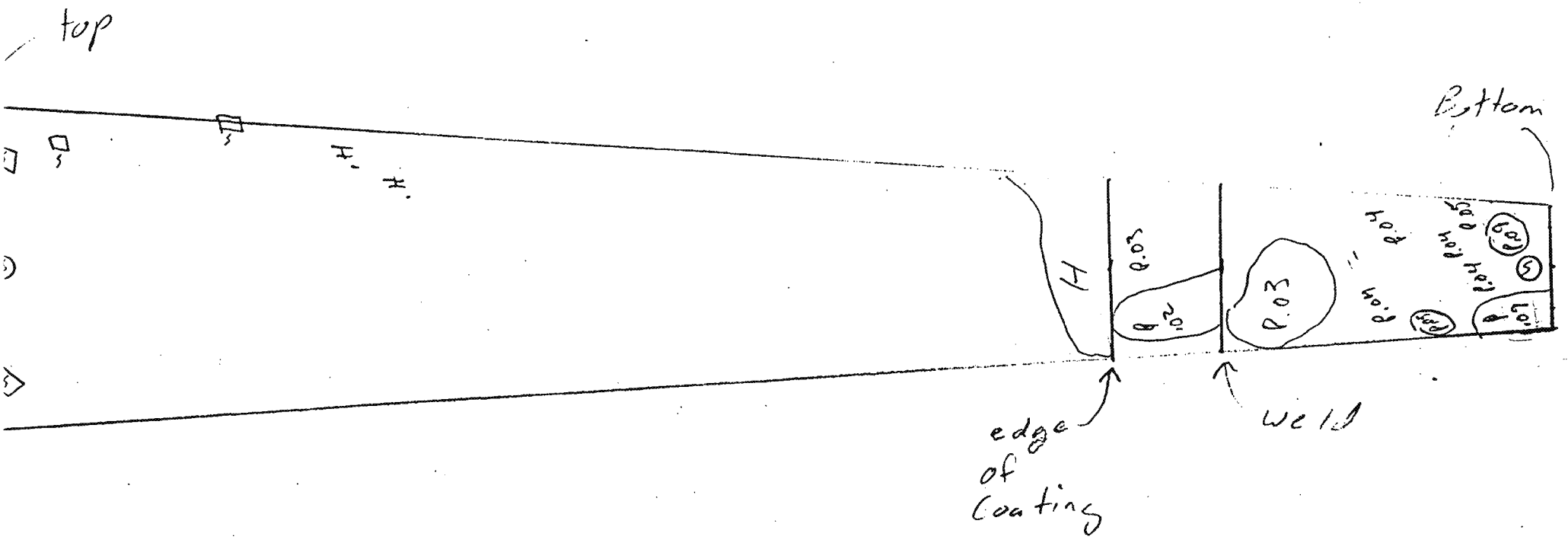

P - Pit
H - Hole in Coating
S - Surface patch
c - coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #17
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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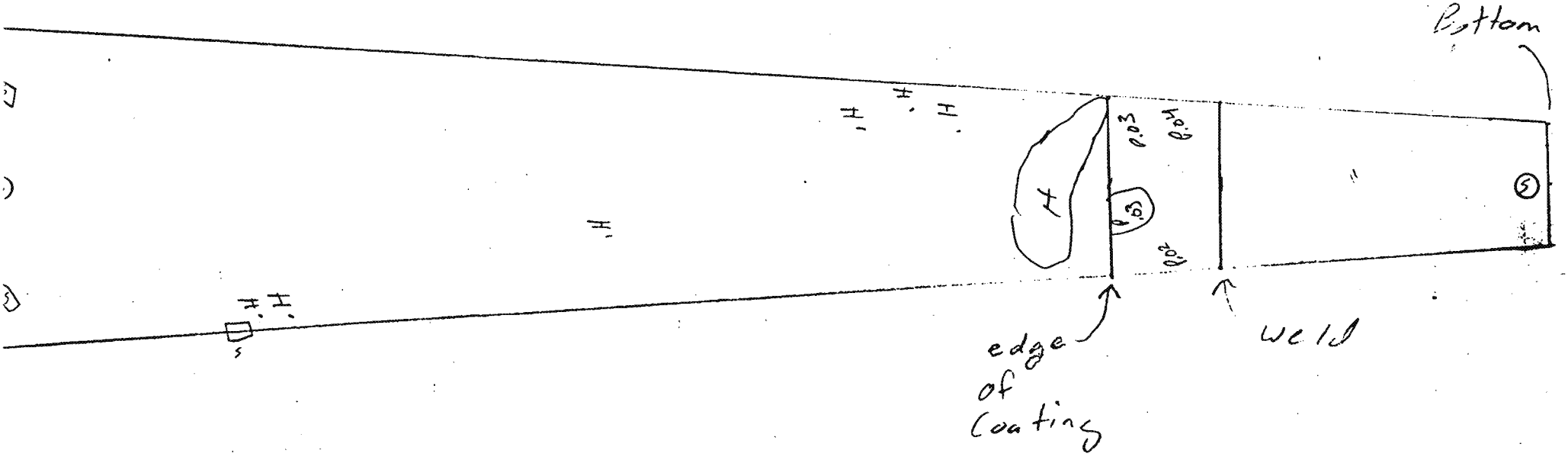

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 18
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Aman Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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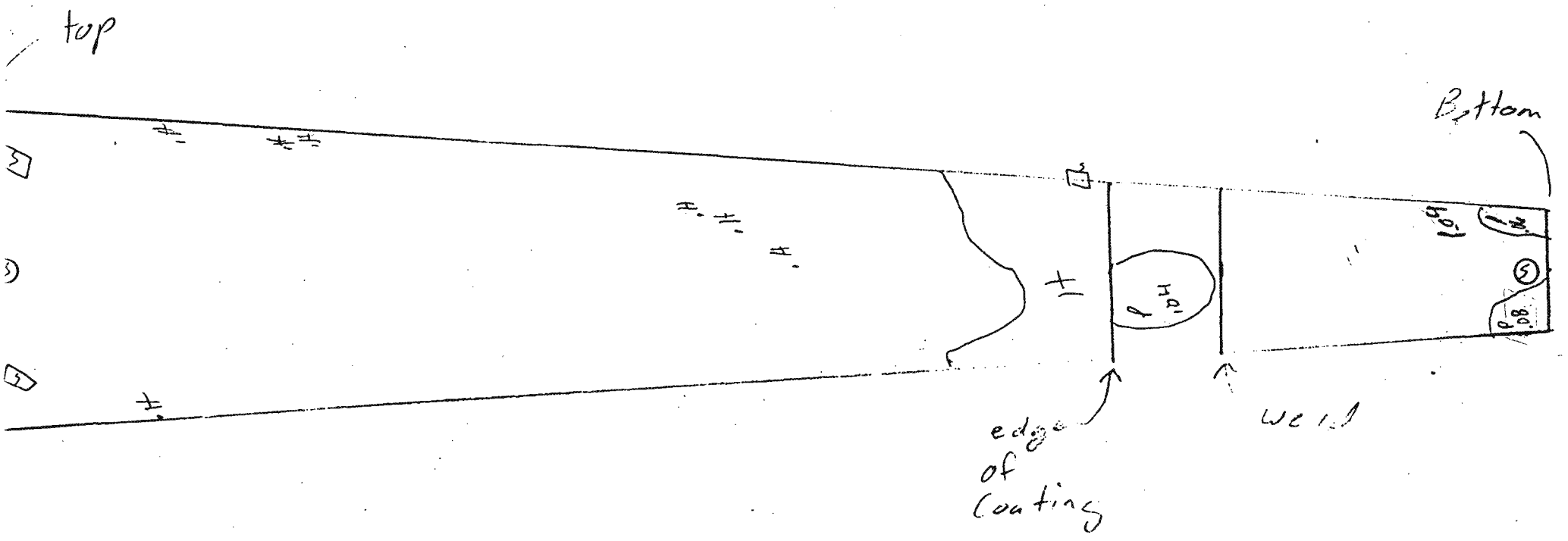

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #19	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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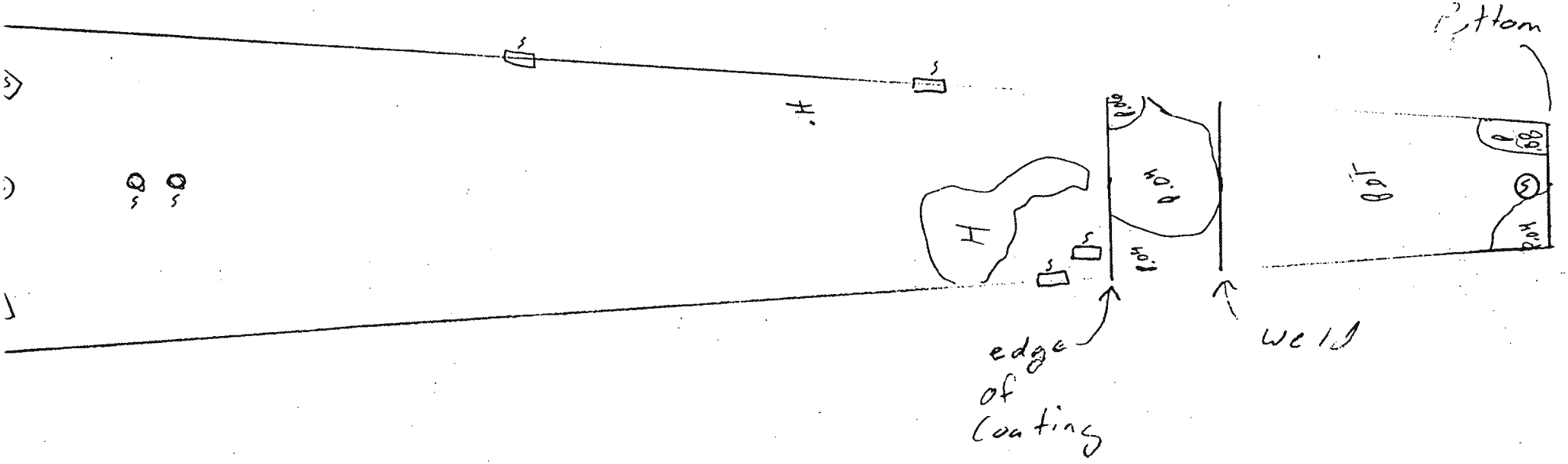

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate # 20
BY:	L Woodman DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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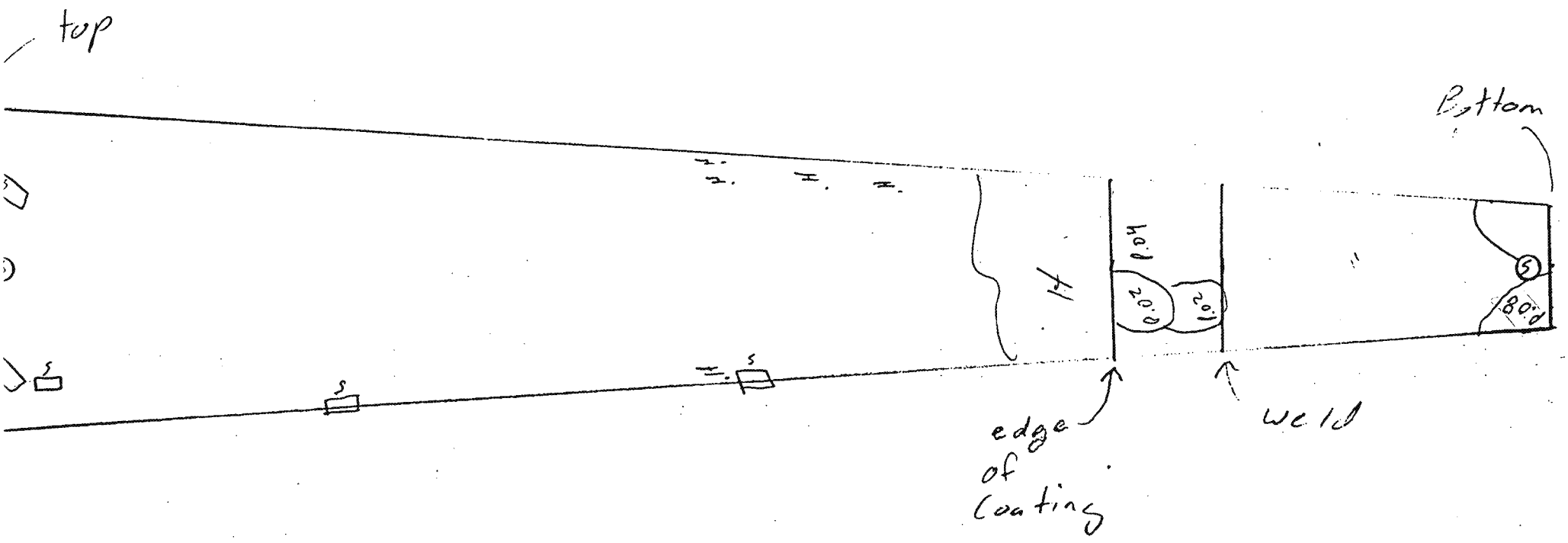


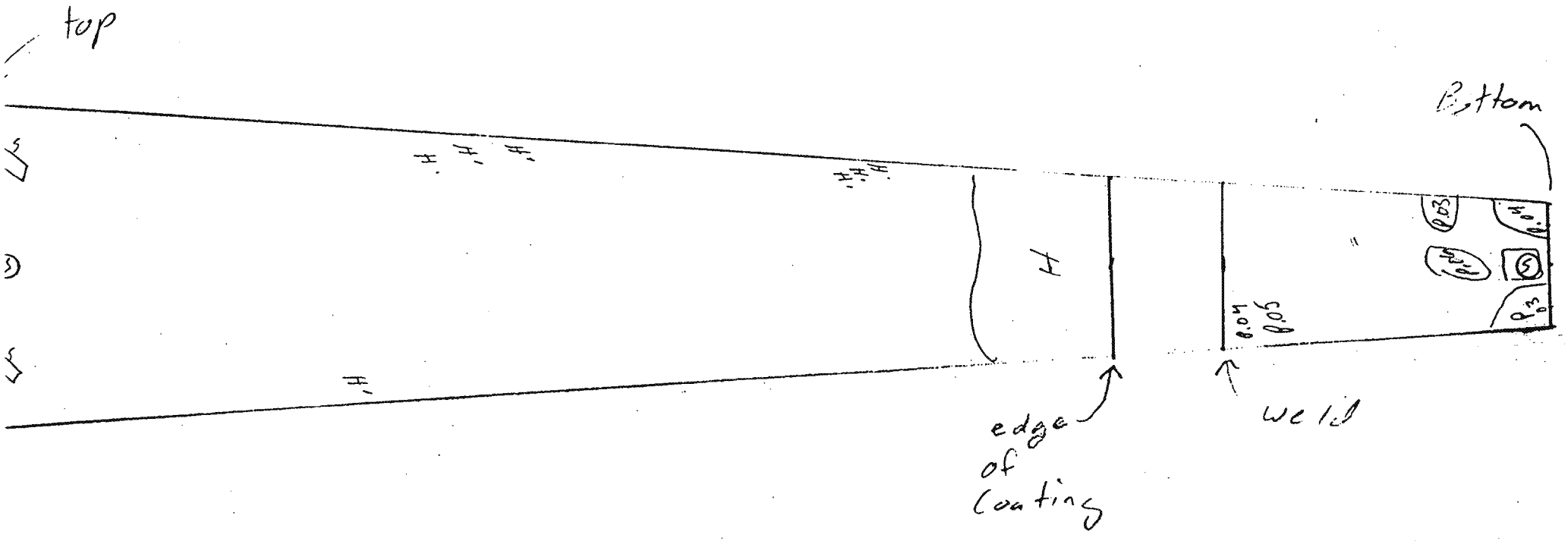
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #21
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 15	
ITEM: Plate #22	
BY: L Woodman	DATE: 7-5-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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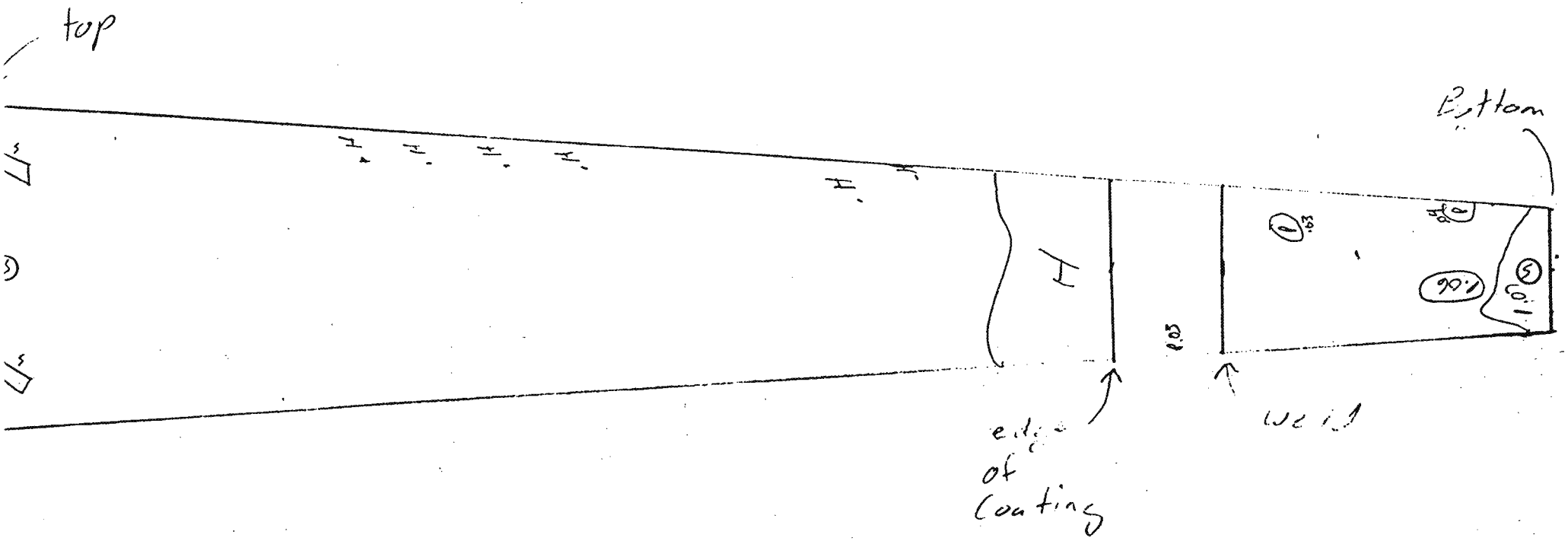

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310-597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 23
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

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Nº 5061

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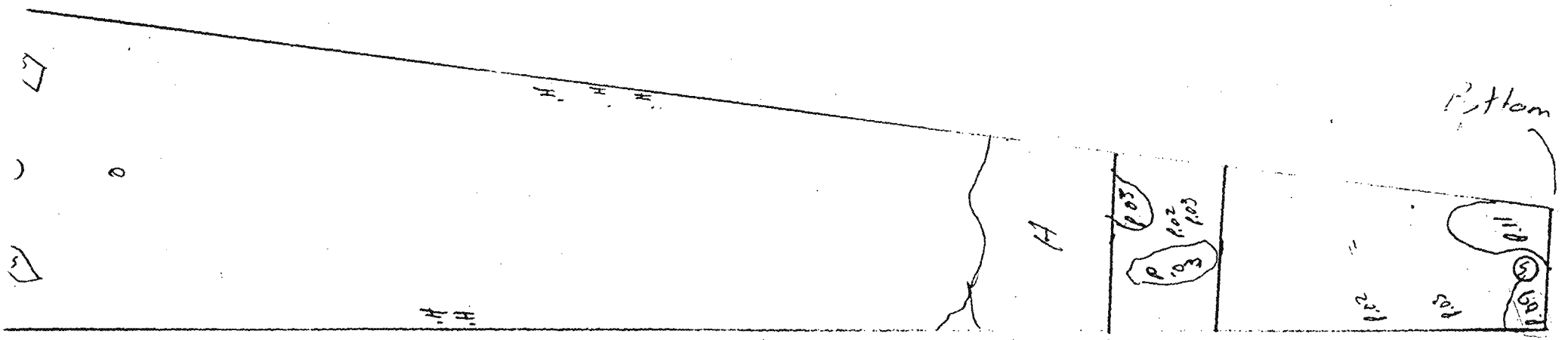
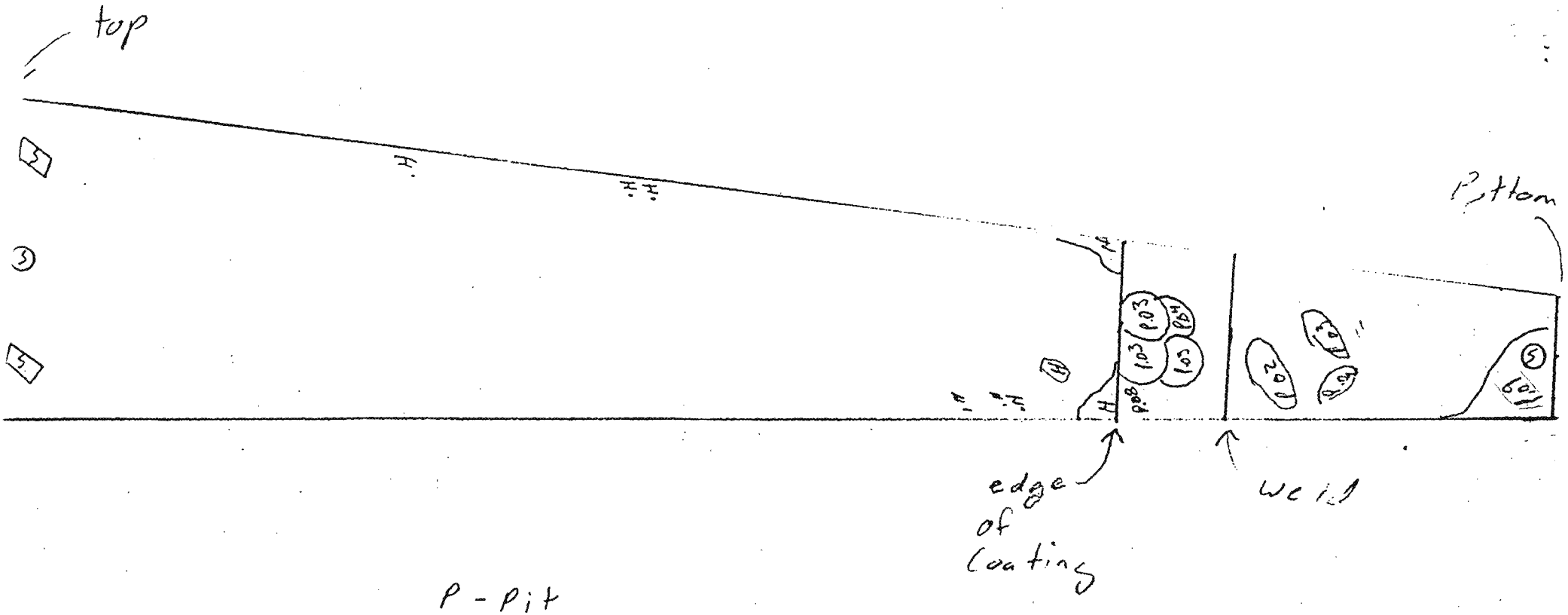


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P.
PROJECT: Re
ITEM: Pla
BY: L L
REPORT NO.:
CLIENT: Am
REMARKS:
97-3932
95
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061



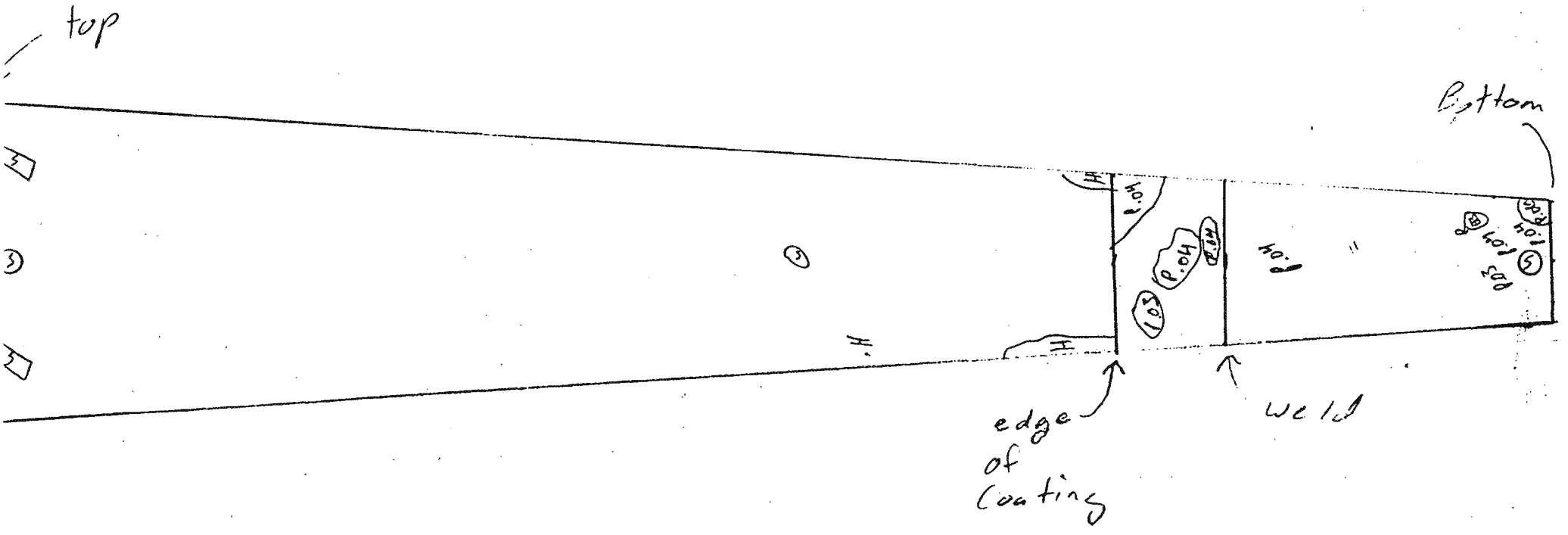
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 25
BY: L Woodman
DATE: 7-5-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - coated pitting

M.M.P. Quality Inspections, Inc.
310-597-3932

PROJECT: Red Hill tank 12
ITEM: Plate # 26
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

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№ 5061

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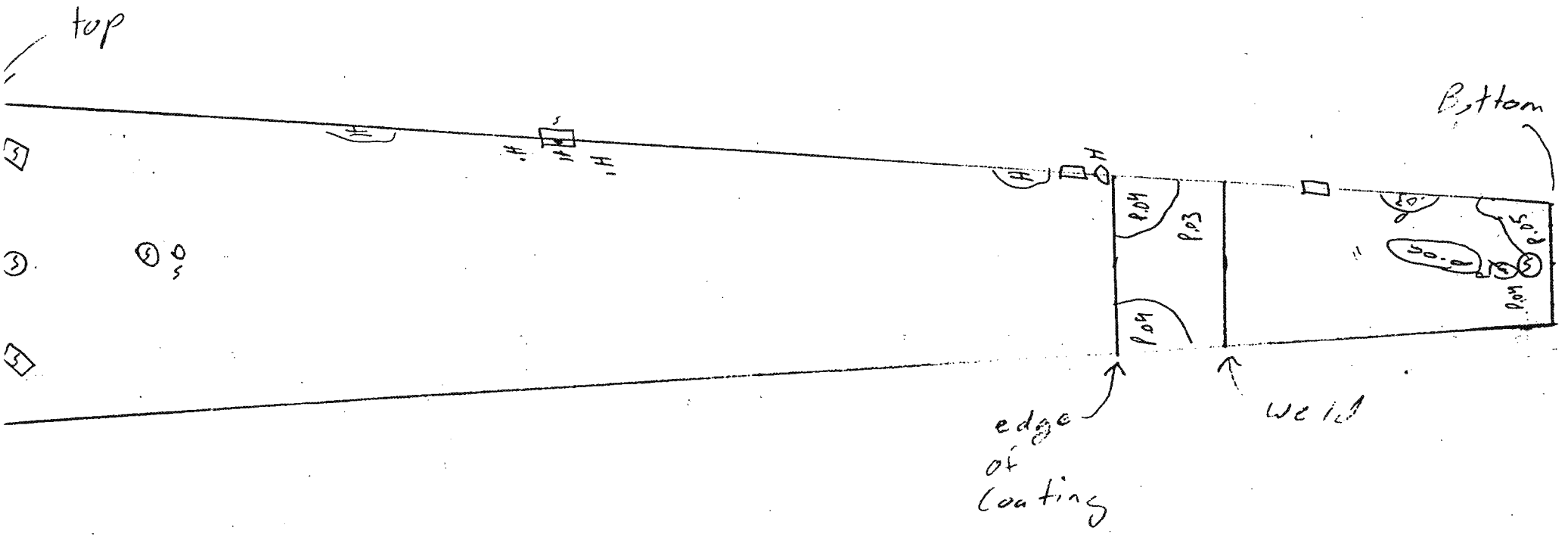
BWS028720



P - Pit
H - Hole in Coating
S - Scar face patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate # 27
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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BWS028721

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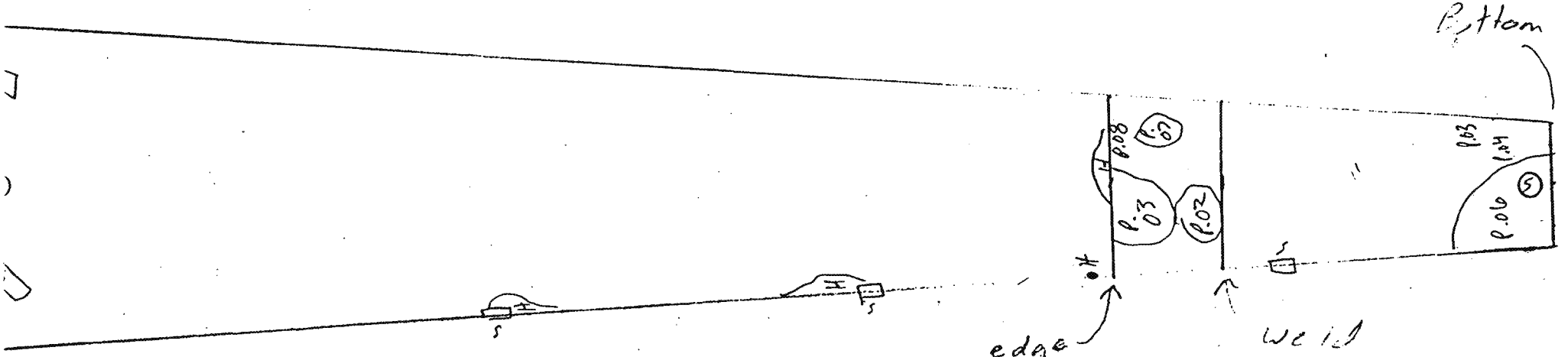

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 28
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

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Nº 5061

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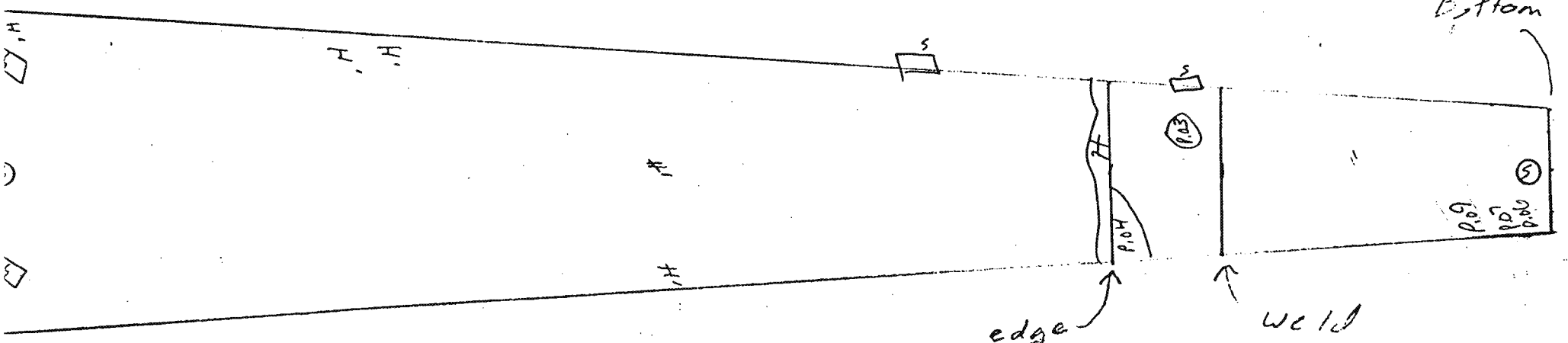

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310-597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate # 29	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
	SHEET OF

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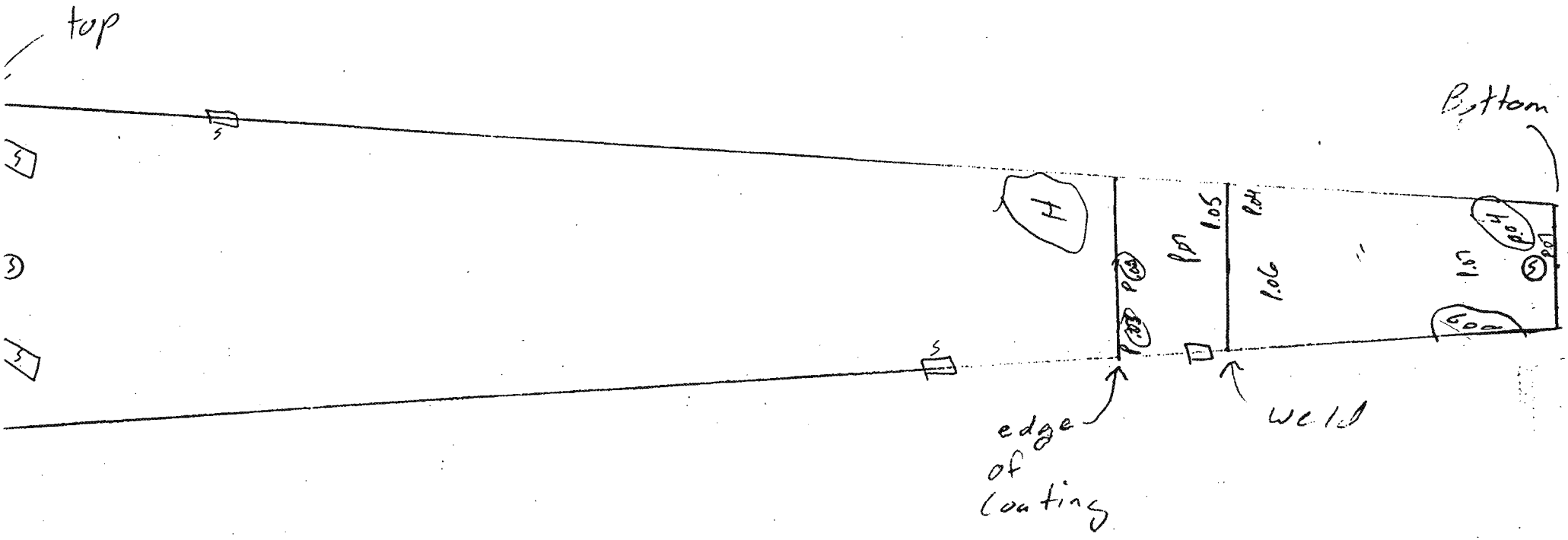
№ 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 30
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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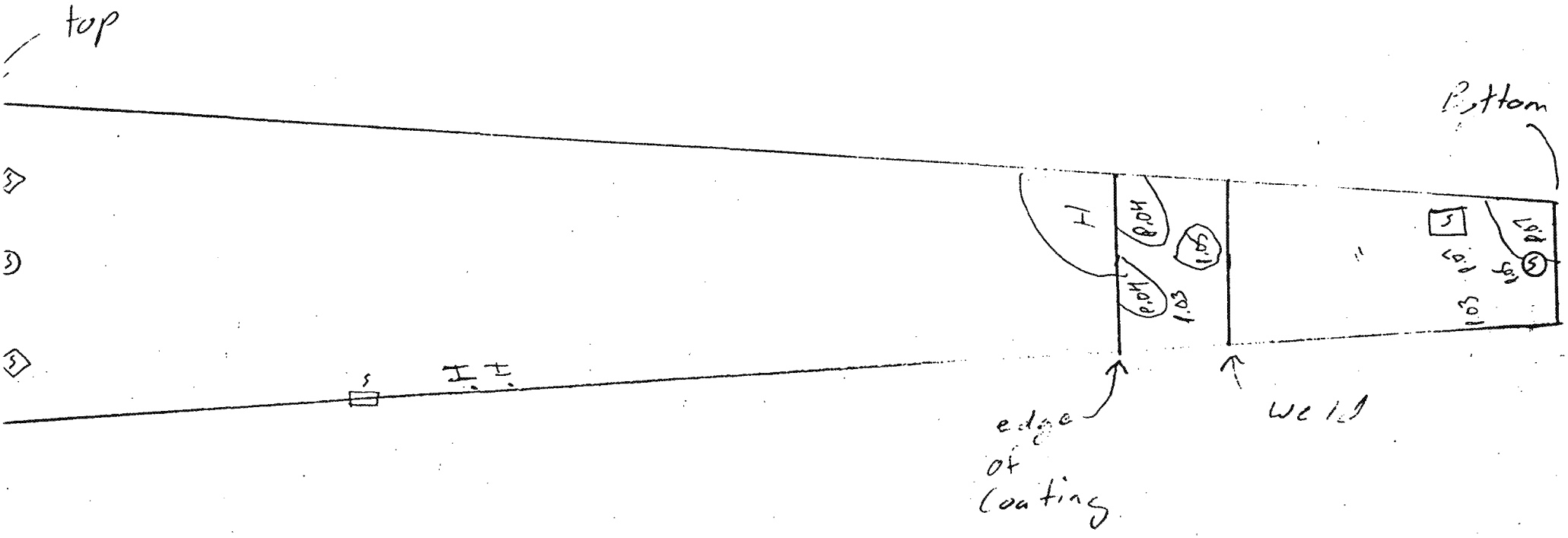


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

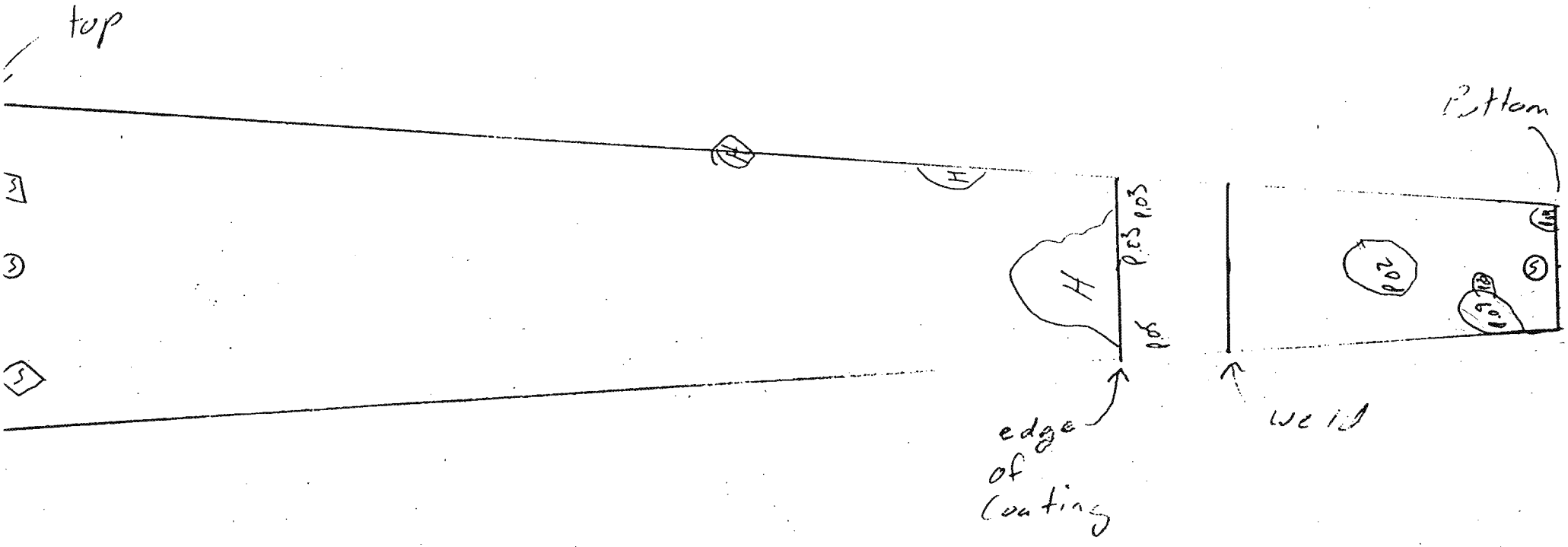
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 31
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

RDHLCC0001353
BWS028725



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 32
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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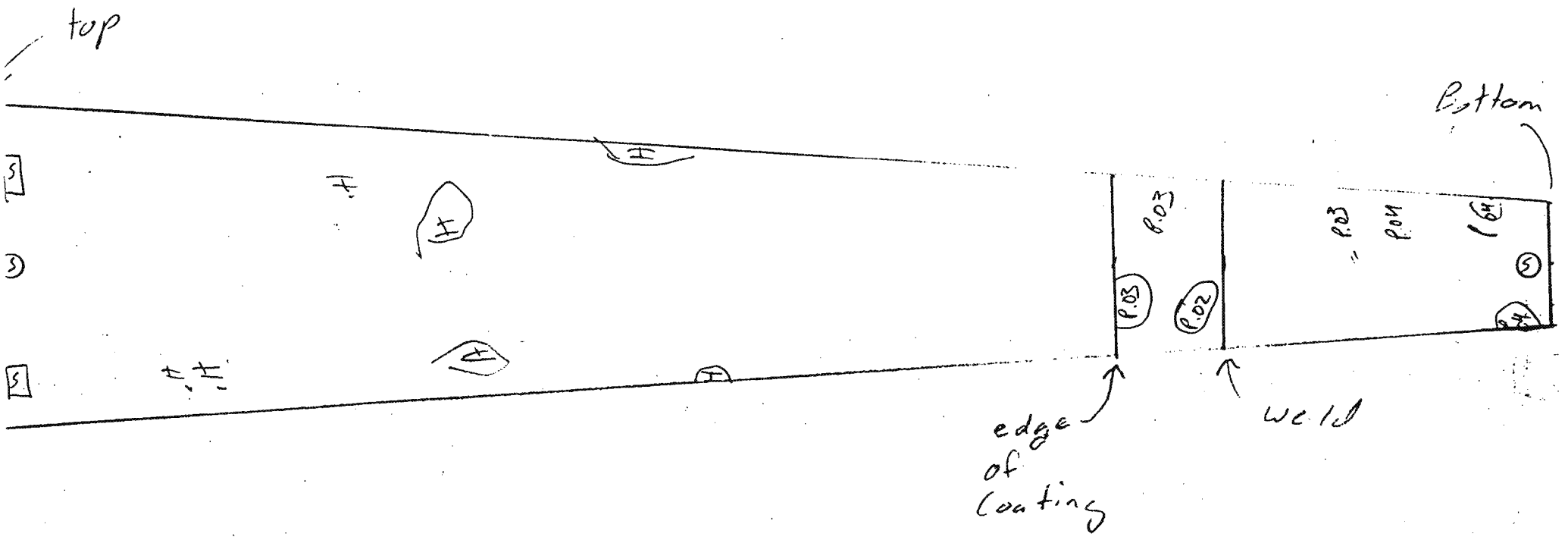

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #33	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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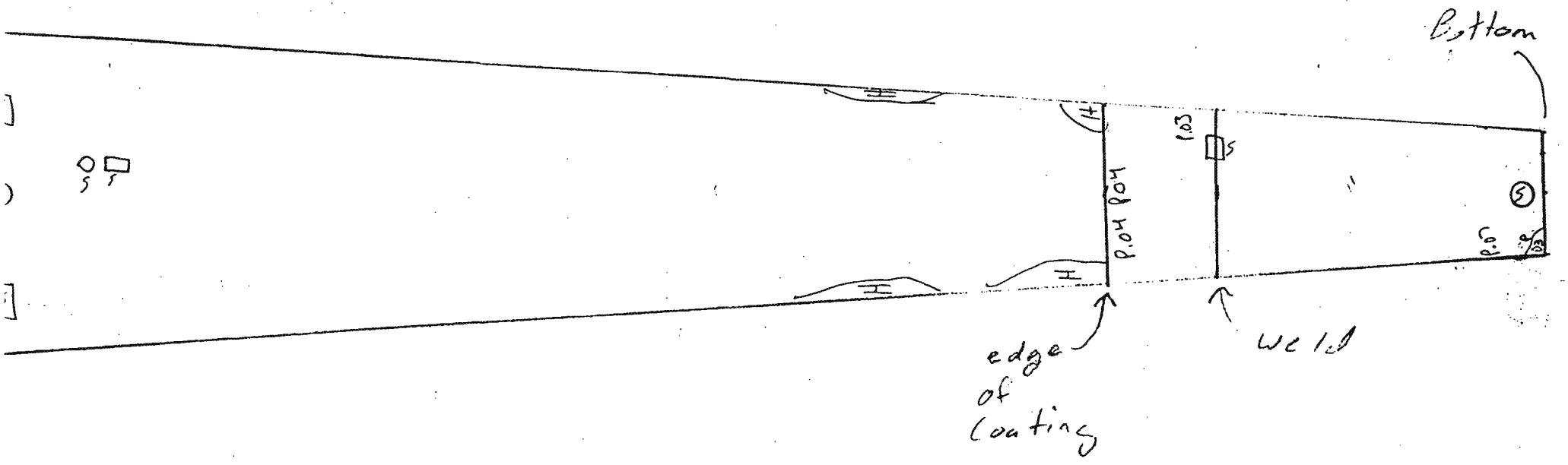

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 34
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Aman Environmental
REMARKS:	
	SHEET OF

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№ 5061

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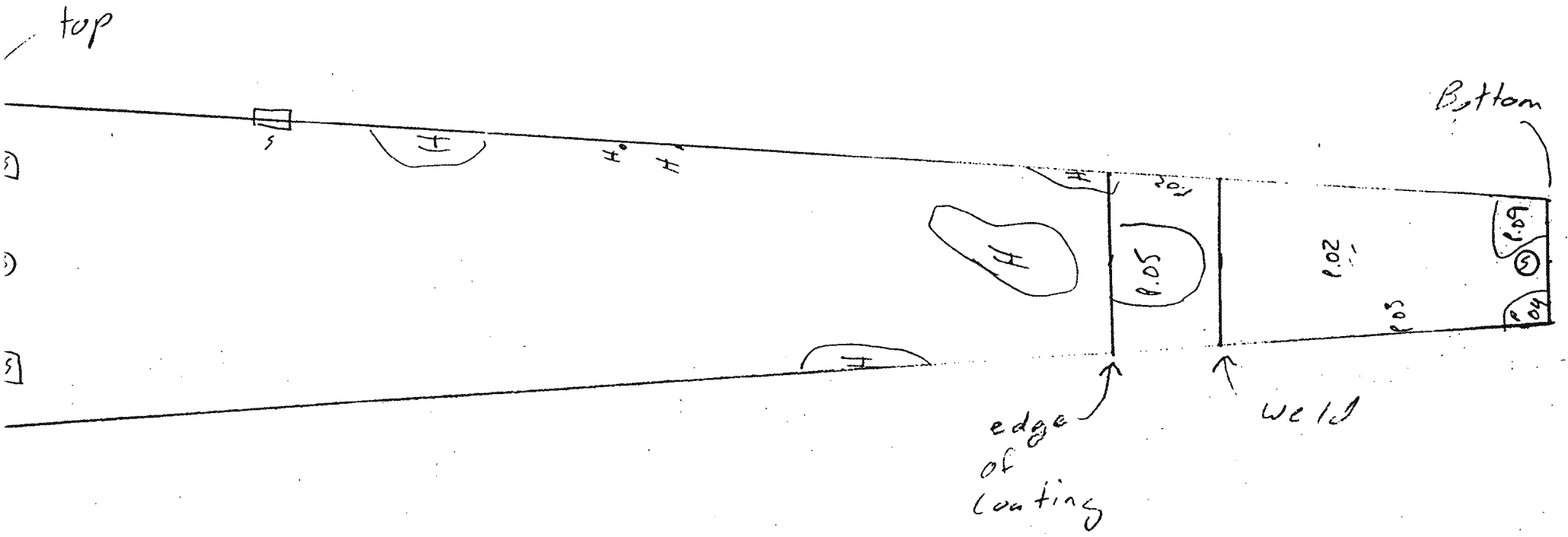
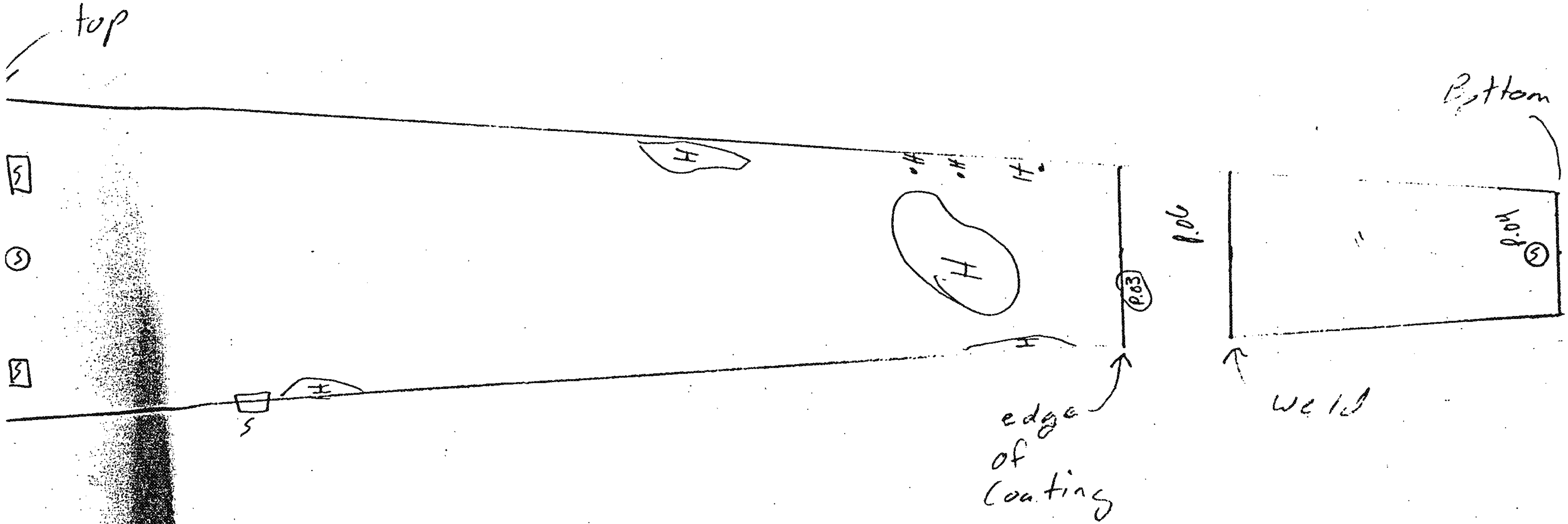


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate # 35	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061



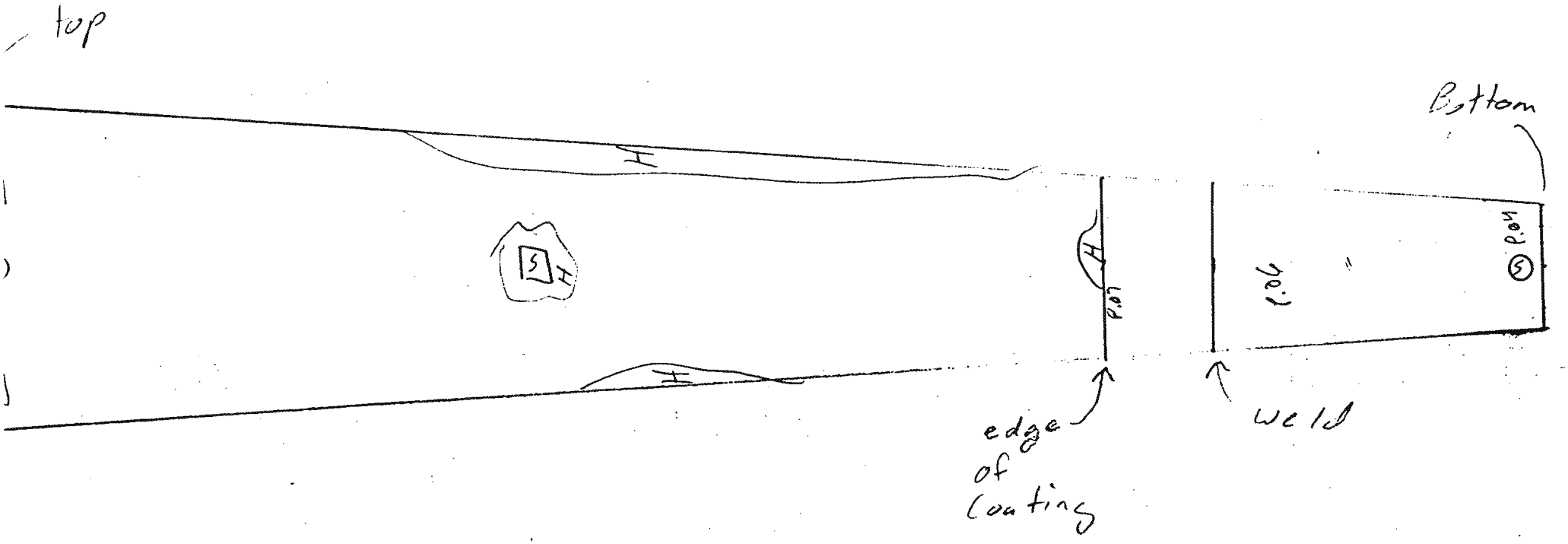
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13	
ITEM: Plate # 36	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
SHEET	OF

M.M.P. Form No. [illegible] /92

№ 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #37	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

No 5061

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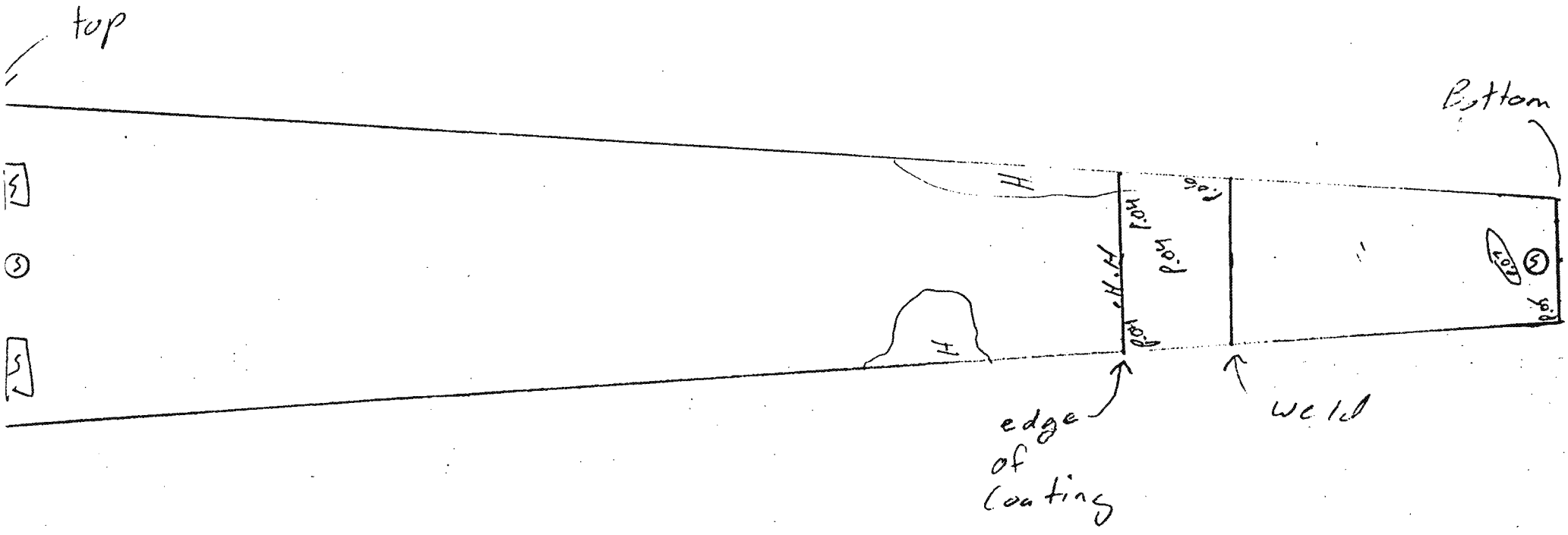

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 12	
ITEM: Plate #38	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

RDHLCC0001360
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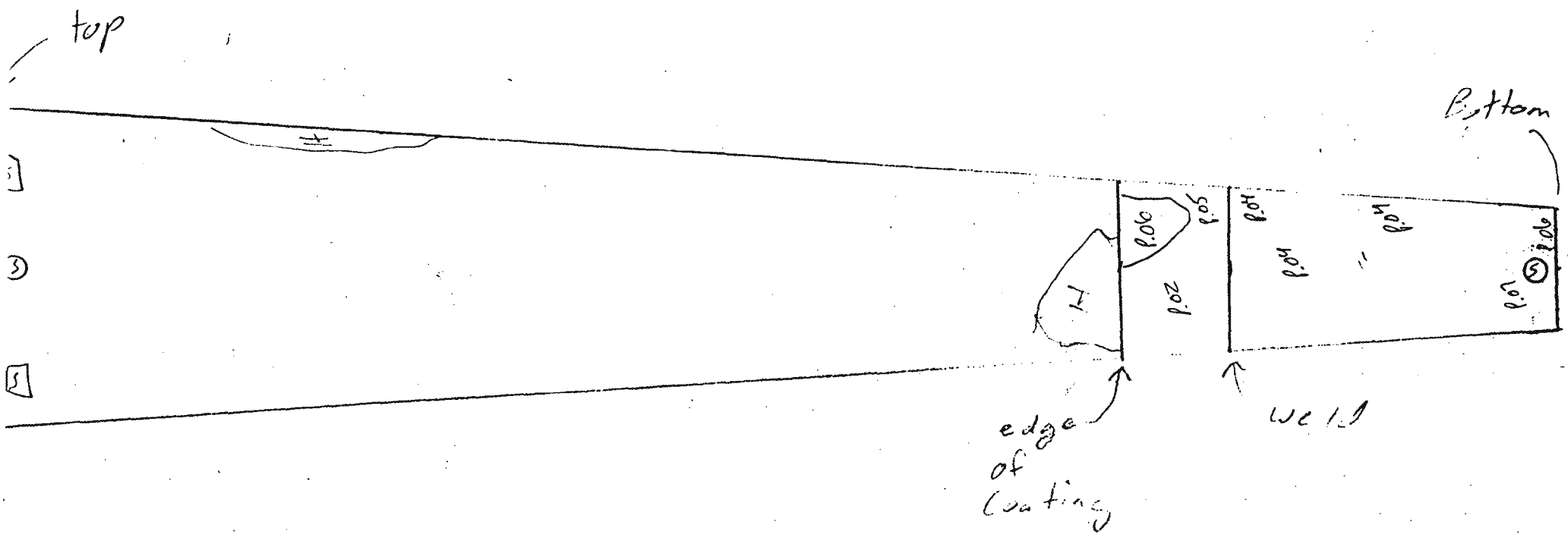

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310-597-3932
PROJECT:	Red Hill tank 13
ITEM:	Plate #39
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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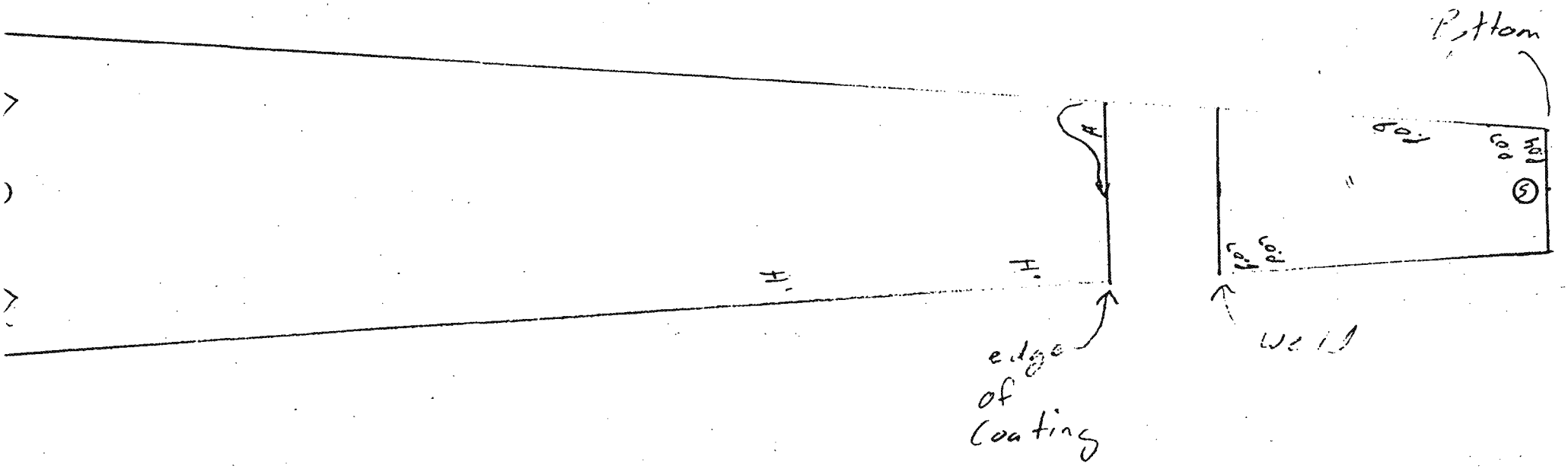

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT:	Red Hill tank 13
ITEM:	Plate #40
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

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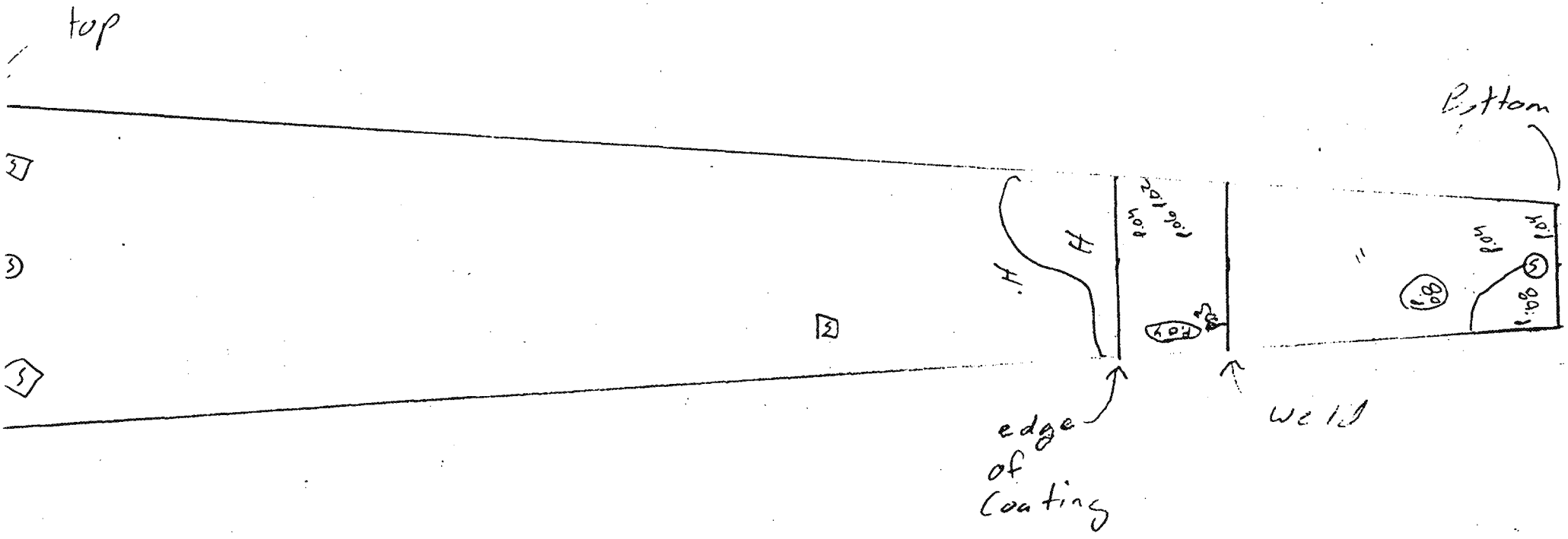


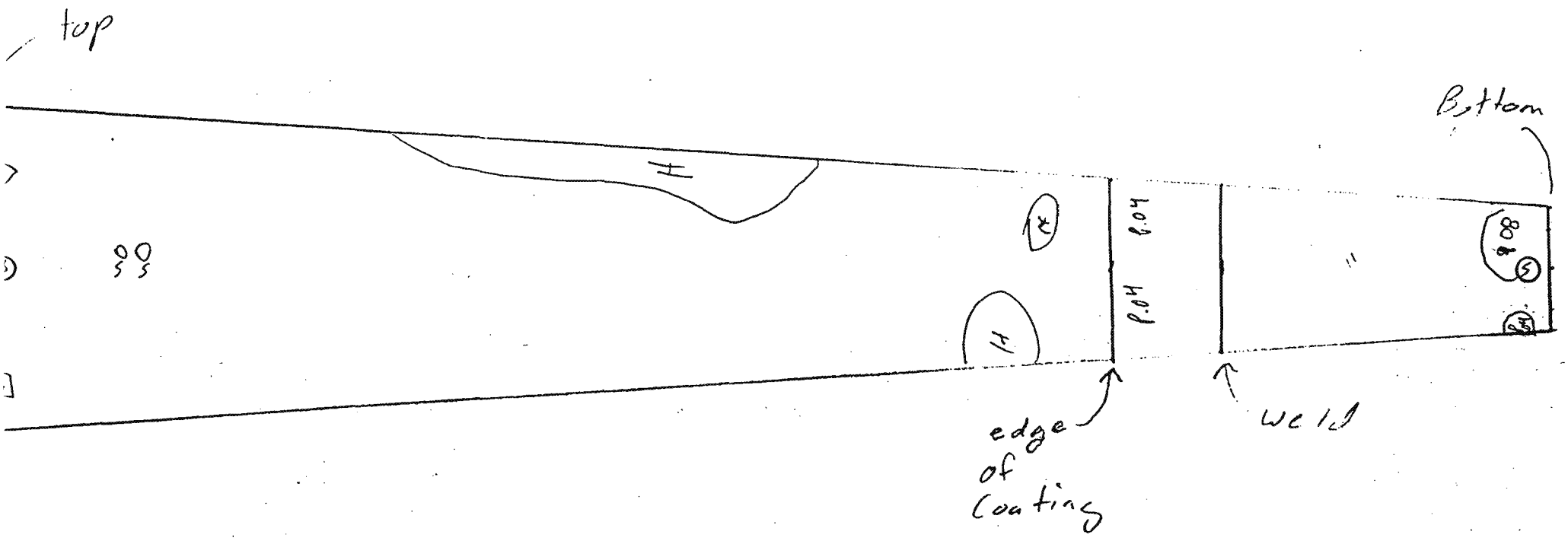
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #41
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061



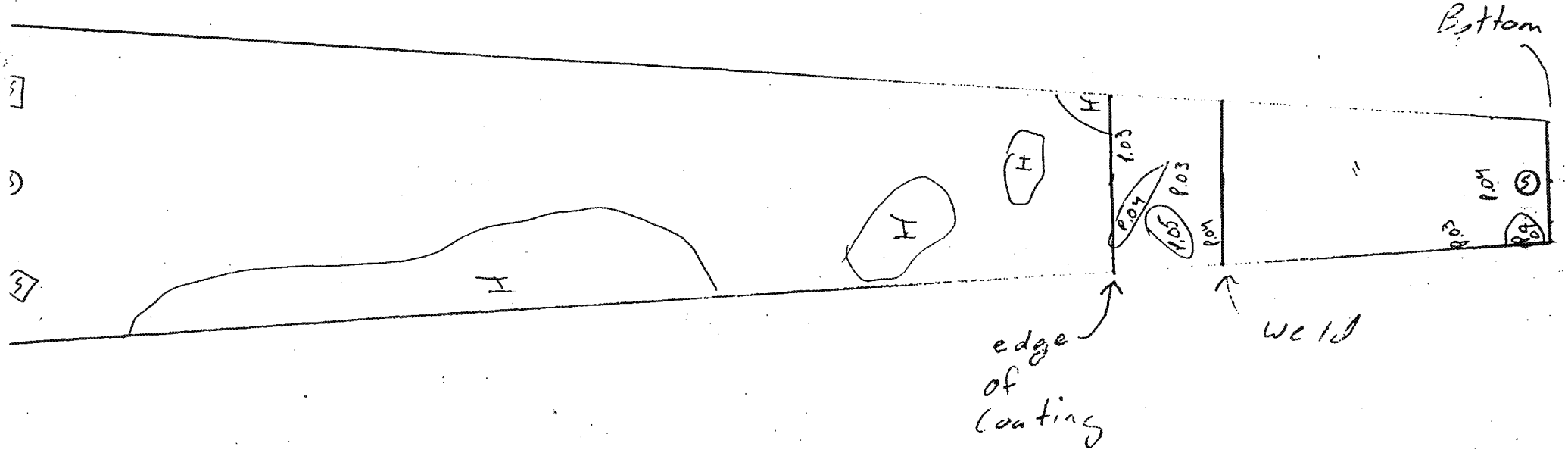
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #42	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

top



P - Pit
H - Holesin Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #43	
BY: L Woodrum	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

Nº 5061

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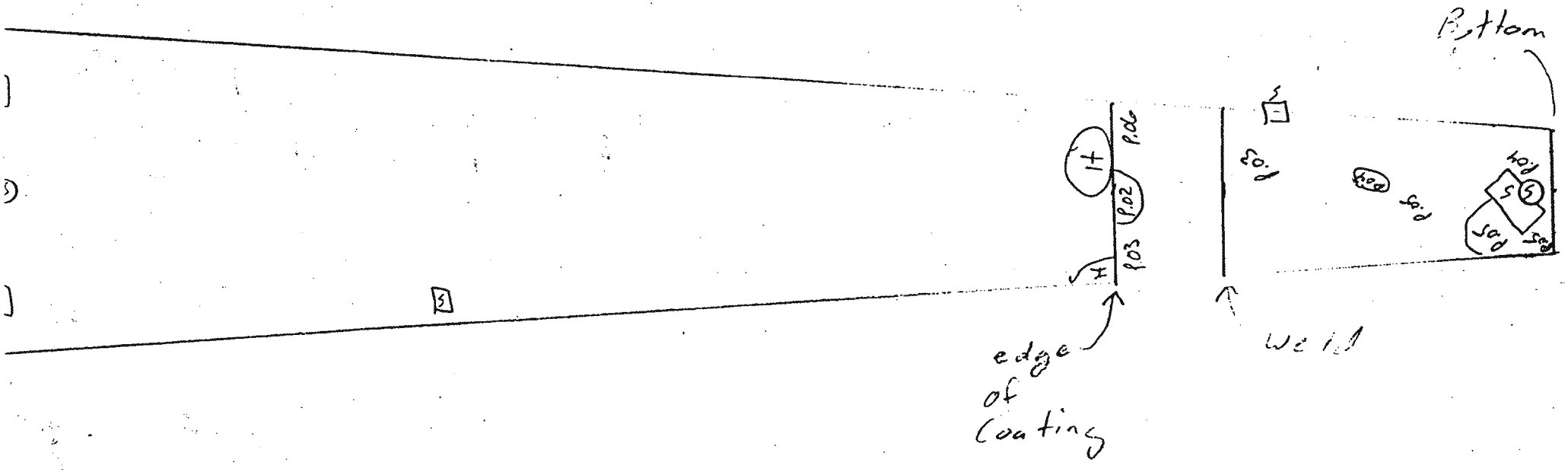


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #44
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P011 Rev. 2/92

№ 5061

RDHLCC0001366
BWS028738

M.M.P. Quality
Inspections, Inc.
N.D.T. and Visual Inspections

310/ 597-3932 FAX: 310/597-6570

UNIT: _____ **UT by** _____

LINE NUMBER: _____ **Assistant** _____

ISO NUMBER: _____ **DATE** ____ / ____ / ____

	A	B	C	D	E
29	.24	25	25	25	24
30	.25	25	25	25	25
31	.24	26	27	25	24
32	.24	25	25	25	24
33	.24	25	25	25	26
34	.25	25	24	25	25
35	.25	26	25	23	25
36	.25	25	25	25	24
37	.25	26	25	25	25
38	.24	25	24	24	24
39	.25	25	25	25	26
40	.24	24	24	25	25
41	.25	26	25	25	25
42	.25	25	25	25	25
43	.24	25	25	24	25
44	.24	25	25	24	26
1	.25	25	25	25	25
2	.25	25	25	25	25
3	.23	24	24	24	25
4	.24	23	24	24	24
5	.25	25	25	25	25
6	.25	25	24	25	25
7	24	25	25	25	25
8	.25	25	25	25	24
9	.25	25	24	25	25
10	.24	25	25	25	25
11	.24	24	24	24	24
12	.24	25	25	25	24
13	.24	24	24	24	23
14	.25	.25	25	24	25
15	.25	.25	25	25	23
16	.25	.25	25	25	22
17	.25	.25	25	25	25
18	.25	.25	25	24	24
19	24	.24	24	24	24
20	.25	25	25	25	25
21	.25	.25	25	24	24
22	.25	.25	26	25	25
23	.25	.24	24	24	25
24	.25	.25	25	26	22
25	.25	.26	26	26	25
26	.25	.26	25	26	25
27	.25	.26	26	25	25

20 June 1995

From: 703

To: 701MG

Subj: Final Inspection of Tank 12

Encl: (1) Marked Up Sketch of Floor of Tank 12

(2) Marked Up Sketch of "A" Course of Tank 12

(3) NAVFAC Drawing No. 7019540

(4) NAVFAC Drawing No. 7019543

1. On 13 June, J. Gammon (FISC) and C. Noyes (AMAN) inspected the floor and the "A" course of Tank 12.

2. Floor. Refer to enclosure (1).

a. Because the floor had already been coated it was impossible to accurately measure the true depth of the pits.

b. One pit caused the holiday detector to ring indicating the possibility that the pit was not entirely coated. Recommend recoating this pit.

3. "A" Course. Refer to enclosure (2).

a. The following discrepancies were found in coated areas of the "A" course that were not sandblasted and re-coated by AMAN. The numbers listed here correspond to the numbers on enclosure (2).

Discrepancy Description	Recommended Action/Comments
(1) Pit, 0.080", coated	None
(2) Dent, 0.105", uncoated, no rust	Regauge dent depth and UT plate at bottom of dent. Suspect damage caused by falling object. Possible plate patch. Recoat.
(3) Double pitted dent, 0.200", uncoated	Same as (2) above.

— 0.23" thickness

Wes says recoat

CHECK

Thickness remaining 0.22" and 0.23"

(4) Three pits, 0.045", uncoated — Recoat

(5) Four broken blisters, uncoated — Recoat

(6) One broken blister, uncoated — Recoat

(7) Two pits, 0.037" and 0.045", coated — None

(8) One broken blister, uncoated — Recoat

(9) Pit, 0.021", uncoated — Recoat

(10) One broken blister, uncoated — Recoat

(11) Pit, 0.070", 1" long, coated — None

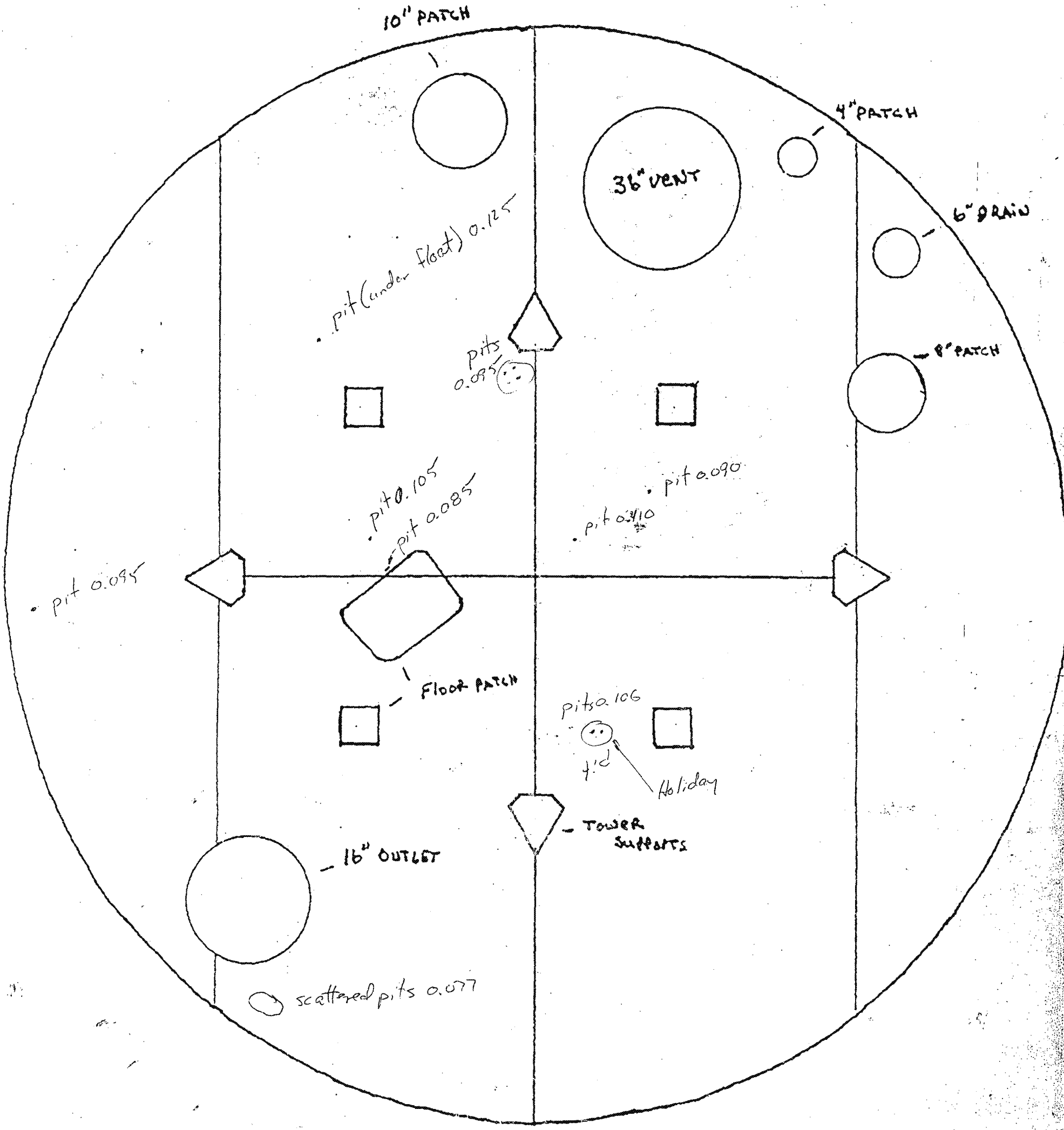
(13) Uncoated area approx. 2" x 3", Refer to enclosure (3), Section D for location. — Recoat

b. One discrepancy was found in the "A" course in the area sandblasted and recoated by AMAN.

(12) Pit, 0.070", coated — None

4. Enclosure (4) Section K shows the counterweight tube ending above the floor plate. In reality the end of the tube is welded directly to the tank floor plate. There is no doubler plate. If water enters the tube through condensation or leak, it will rest permanently on the floor plate and cause corrosion. Recommend removing the bottom three inches of the counterweight tube (or enough to get a vacuum box under the tube end), check the floor plate for corrosion and leaks, coat the floor plate, and weld an endcap to the bottom of the counterweight tube.

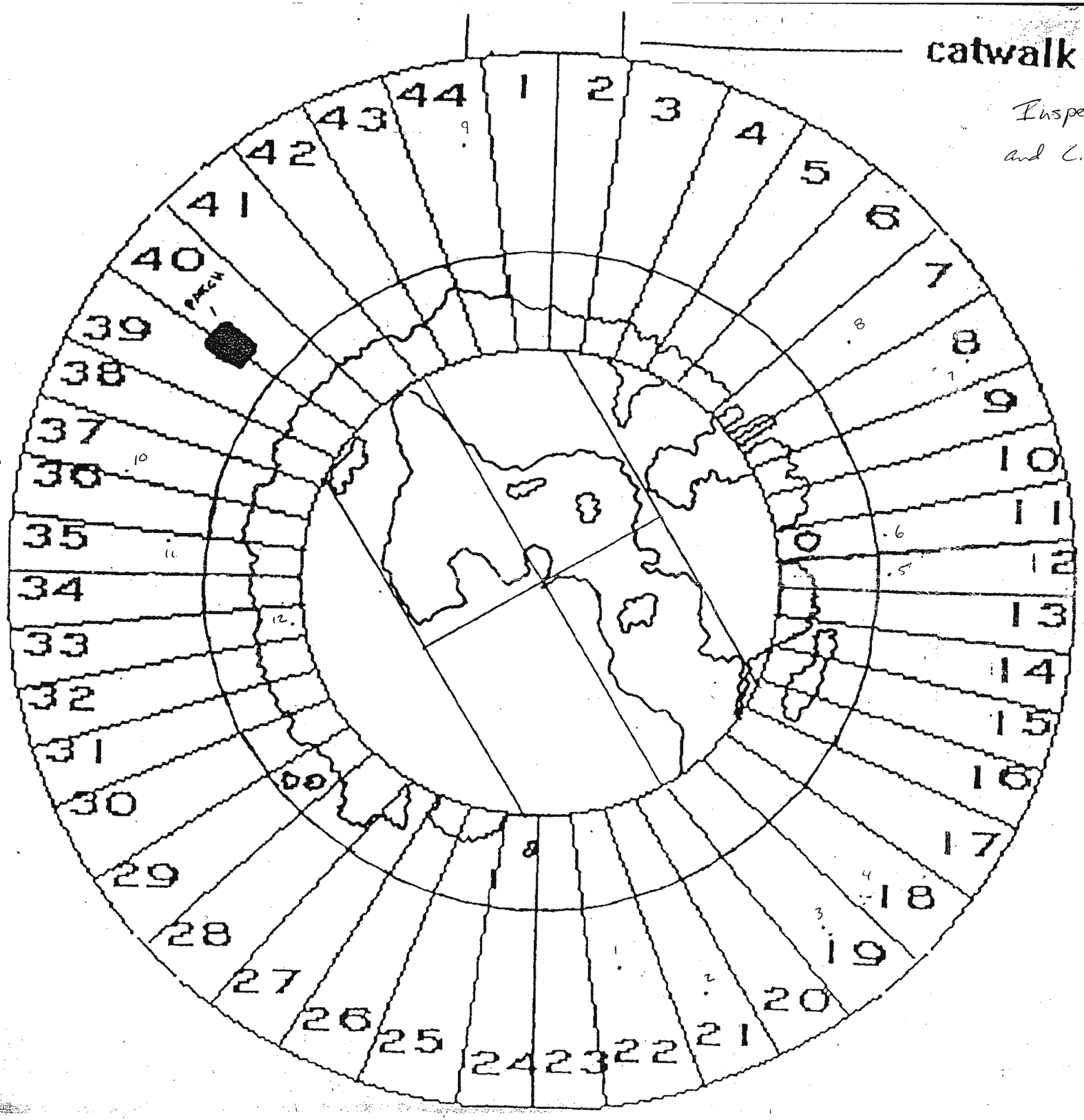
J. E. Hamman



Inspected 6/13/95 by J. Gammon (FISE) and C. Noyes (AMAN).

Red Hill tank #12 floor UT

Enclosure (1)



Inspected 6/13/95 by T. Glanimon (KFSC) and C. Noyes (AMAN).

red Hill
tank #12

Areas of
Coating removal

Enclosure (2)

AMAN ENVIRONMENTAL CONSTRUCTION, INC.
REMEDIATION AND DEMOLITION CONTRACTORS

July 27, 1995

Commanding Officer
Navy Public Works Center
Naval Facilities Engineering Command Contracts
Pearl Harbor, Hawaii 96860-5470

ATTENTION: **Mr. Wesley Choy, PWC Code 421**

SUBJECT: **Submittal, 18d, 13 July 1995**

REFERENCE: **Contract No. N62755-94-D-2802**
CLEAN UNDERGROUND FUEL STORAGE TANKS
RED HILL FUEL STORAGE FACILITY

NUMBER: **RH-174**

Mr. Wes Choy,

The purpose of this letter is to answer the seven (7) remarks made on Submittal 18d, Tank 13 API Inspection, Specification, Paragraph number C.12.c.

1. Four (4) copies of the signed API report by Conam MMP Inspection, Inc., dated 26 June 1995 to 3 July 1995, are attached per Clause C.12.d .
2. The ultrasonic results are included in above item #1.
3. The plate drawings, in question, are both of plate #1. As the legend states, one drawing identifies holidays and the other indicates pit, hole, surface patch and coated pitting identifications.
4. The contract does not require a tank bottom evaluation. API 653, Section 2.4, "Tank Bottom Evaluation," does not state that the API inspector is required to furnish a tank bottom evaluation. Section 2.4 states that "leaks in tank bottoms are not acceptable." The remainder of the section provides instructions on how to complete the evaluation.
5. A visual inspection of the tank shell is included in above item #1.
6. The layouts of plates are included in above item #1.
7. Aman Environmental Construction, Inc. (AECI) has complied with Clause C.12; misunderstanding of the legend, misinterpretation of the contract or lack of distribution of material to respective personnel in your organization does not construe as noncompliance with the intent of Section C.12.

614 East Edna Place ▪ Covina, CA 91723 ▪ (818) 967-4287 ▪ FAX (818) 332-1877
P.O. Box 1192 ▪ Soldotna, AK 99669 ▪ (907) 262-1713 ▪ FAX (907) 262-5318

Should you have any questions, please do not hesitate to call me at 833-1654.

Sincerely,

C. Doug Fenstermacher
Site Superintendent

CDF:csp

C:\wpwin60\redhil\rh174pd

Conam MMP Inspection Inc
1875 Coronado Avenue
Signal Hill, CA 90804
Telephone + 1 310-597-3932
Facsimile + 1 310-597-6570

CONAM

DESCRIPTION: Red Hill Storage Facility Tank #13

INSPECTION DATES: June 26, 1995 to July 3, 1995

INSPECTION TIME: 7:00 am to 3:30 pm

AMAN ENVIRONMENTAL REPRESENTATIVE: Doug Fenstermacher

CONAM MMP REPRESENTATIVE: Leif Woodman

EXTENT OF INSPECTION:

1.Perform inspection on the interior of the tank.
2. Perform leak testing on the floor and the first course.
3. Perform ultrasonic thickness testing on the floor and the first course.
4. Inspections performed to applicable API 653 criteria.

RESULTS OF SURVEY:

Floor:

1. A mild general corrosion was noted on the floor.
2. Minor scattered pitting was noted with a maximum of 0.15" noted on the ring on the bottom of the first course.
3. The coating had been mostly removed with some primer still remaining.
4. No leaks were detected on the plates.

First Course:

1. A mild general corrosion was noted on the plates.
2. Mild scattered pitting was noted. The maximum pit depth noted was .11".
3. The coating had been removed from the bottom six feet of the course.
4. The remaining coated area had some scratches was moderately blistered with some of the blisters having been popped.
5. No leaks were detected on the plates.

CONAM

Second Course:

1. There was moderate blistering at the bottom of the course which decreased toward the top of the course.
2. There were no leaks detected on the plates.
3. The course was inspected from the top of the first course.

Shell:
1. No leaks were Noted on the shell.
2. The shell was inspected from the catwalk.

RECOMMENDATIONS:

1. Recoat areas were the coating was scratched or was a hole that has exposed the bare metal.

CONAM MMP INSPECTIONS:

Leif Woodman
API 653 #1059

AMAN REPRESENTATIVE:

Inspections, Inc.

VACUUM LEAK TEST REPORT

INSPECTION DATE 6-30-95 TIME 1530 ITEM DESCRIPTION Tank #13

CUSTOMER Amen Environmental JOB LOCATION/ADDRESS Red Hill tank farm

BILLING ADDRESS _____ CITY _____ STATE Hawaii

P.O. NO. _____ JOB NO. _____

CONTACT Doug Feldstermacher PHONE NO. _____ TEST SPECIFICATIONS ASME Sect V Art 10

ACCEPTANCE STANDARDS No Emissions permitted

METHOD USED:

2. BUBBLE ☒ i. DIRECT ☐ 100% INSP. X SPOT INSP. _____

ii. VACUUM ☒ CUSTOMER INFO _____

PROC. NO. mmp-tp-lt-001 REV. NO. 1

SURFACE CONDITION Bare steel / coated after 6' up on 1st course
(MUST BE THOROUGHLY CLEAN)

TEST USED: Vacuum box bubble emission SURFACE TEMP.: 80° F

BUBBLE SOLUTION: Snoop Solution VACUUM SOURCE: Air Ejector

SOAK TIME: 15 Seconds VACUUM PSI (3 PSI) 5-25 in Vacuum

APPLICATION: FLOWING ☐ SPRAYING ☐ BRUSHING ☒

VACUUM BOX SIZE: 8"x36" - 9"x13" - 4"x6" - 4"x9" - 4"x13" - 6"x6"x7"

PRESSURE RETENTION TIME, (15 SEC.): 15 Seconds minimum

IDENT. NO.	ACCEPT	REJECT	GRADE	INTERPRETATION	REMARKS
1st Course welds	X			No relevant indications	
ring at top of 1st course	X			" " "	
1st Course patch plates				" " "	
ring at Btm of 1st course				" " "	
floor Btm welds				" " "	
Nozzle repads to floor				" " "	
Nozzles to repads				" " "	
Angle iron legs				" " "	
tug points (pad eyes)				" " "	
floor patch plates				" " "	

SKETCH HERE OR ___ SEE ATTACHED

ATTACHMENT ☐ YES ☐ NO

EXAMINED BY: _____

DATE: 6-30-95

Inspections, Inc.

VACUUM LEAK TEST REPORT

INSPECTION DATE 6-30-95 TIME 1530 ITEM DESCRIPTION Tank #13

CUSTOMER Amoco Environmental JOB LOCATION/ADDRESS Red Hill tank farm

BILLING ADDRESS _____ CITY _____ STATE Hawaii

P.O. NO. _____ JOB NO. _____

CONTACT DR-8 Feastermacher PHONE NO. _____ TEST SPECIFICATIONS Asme Sect V Art 10

ACCEPTANCE STANDARDS No emission permitted

METHOD USED:

100% INSP. X SPOT INSP. _____

2. BUBBLE ☒ i. DIRECT ☐ CUSTOMER INFO _____

ii. VACUUM ☒ PROC. NO. mmp-tp-lt-001 REV. NO. 1

SURFACE CONDITION Bare steel / Coated after 6' on 1st course
(MUST BE THOROUGHLY CLEAN)

TEST USED: Vacuum box bubble emission SURFACE TEMP.: 80° F

BUBBLE SOLUTION: Snoop Solution VACUUM SOURCE: Air Ejector

SOAK TIME: 15 Seconds VACUUM PSI (3 PSI) 5-25 in Vacuum

APPLICATION: FLOWING ☐ SPRAYING ☐ BRUSHING ☒

VACUUM BOX SIZE: 3"x36" - 9"x13" - 9x6" - 4"x9" - 4"x13" - 6"x6"x7"

PRESSURE RETENTION TIME, (15 SEC.): 15 Seconds minimum

IDENT. NO.	ACCEPT	REJECT	GRADE	INTERPRETATION	REMARKS
tower roof welds				No relevant indications	
Angle iron brackets				" " "	
18" Nozzle supports				" " "	

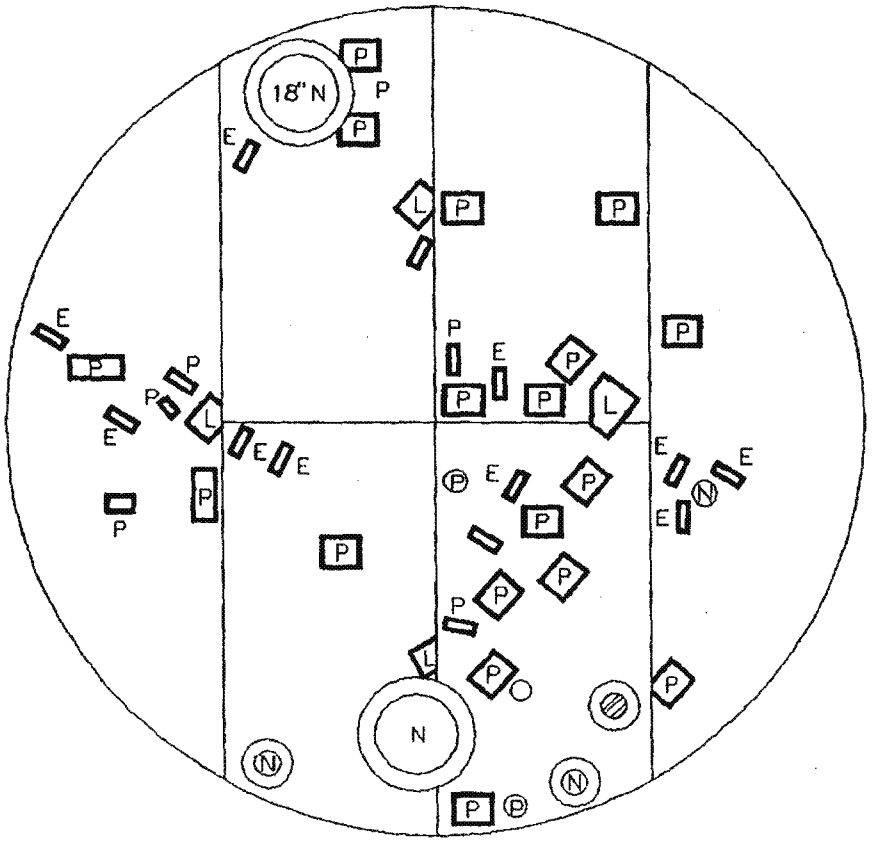
SKETCH HERE OR ___ SEE ATTACHED

ATTACHMENT ☐ YES

☐ NO

EXAMINED BY: _____

DATE: 6-30-95



LEGEND

ITEM	DESCRIPTION
N	NOZZLE
P	PATCH
L	TOWER LEG
E	PAD EYE

ITEM: TK-#13
LOCATION: RED HILL TANK FARM
DIAMETER:
INSPECTION: ULTRASONIC
INSP. DATE: 7/3/95
CONAM N.D.E. INSPECTIONS INC.

CLIENT: AMAN ENVIRONMENTAL

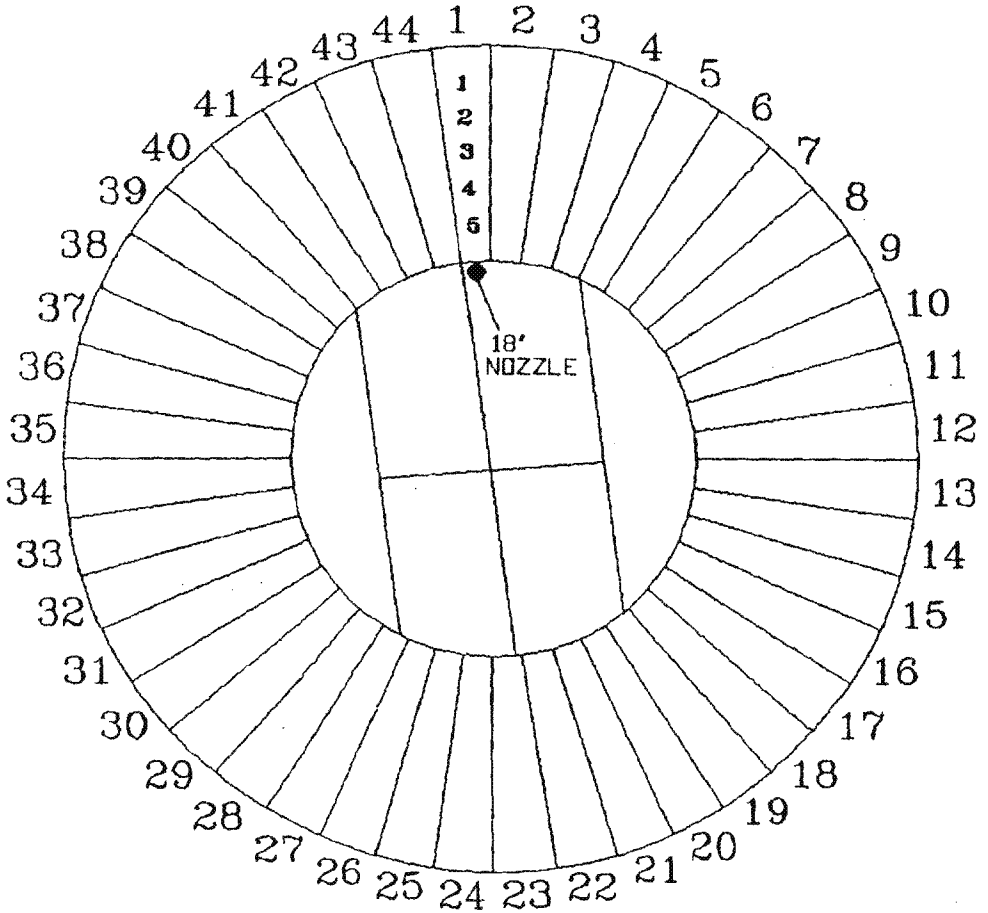
TITLE: FLOOR LAYOUT

INSPECTED BY: L WOODMAN

COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA

DRAWN BY: bdb
DATE: 7/24/95
REQUEST NO.:

NOTE: EACH WEDGE WAS ULTRASONIC THICKNESS TESTED ON A 36" CENTER DISTANCE AT LOCATION NUMBERED 1 THROUGH 5



LEGEND

(T READINGS ARE LISTED FROM THE OUTSIDE EDGE TO THE CENTER)

ALL ULTRASONIC READINGS LISTED IN INCHES.
LOWER READINGS FOR CORRUSION PRONE AREAS INDICATED IN RED

POINTS ●	1	2	3	4	5	POINTS ●	1	2	3	4	5
1	.25	.25	.25	.25	.25	23	.25	.25	.25	.26	.22
2	.23	.24	.24	.24	.25	24	.25	.26	.26	.26	.25
3	.24	.23	.24	.24	.24	25	.25	.26	.25	.26	.25
4	.25	.25	.25	.25	.25	26	.25	.26	.26	.25	.25
5	.25	.25	.24	.25	.25	27	.24	.25	.25	.25	.24
6	.24	.25	.25	.25	.25	28	.25	.25	.25	.25	.25
7	.25	.25	.25	.25	.24	29	.24	.26	.27	.25	.24
8	.25	.25	.24	.25	.25	30	.24	.25	.25	.25	.24
9	.24	.25	.25	.25	.25	31	.24	.25	.25	.25	.26
10	.24	.24	.24	.24	.24	32	.25	.25	.24	.25	.25
11	.24	.25	.25	.25	.24	33	.25	.26	.25	.23	.25
12	.24	.24	.24	.24	.23	34	.25	.25	.25	.25	.24
13	.25	.25	.25	.24	.25	35	.25	.26	.25	.25	.25
14	.25	.25	.25	.25	.23	36	.25	.26	.25	.25	.25
15	.25	.25	.25	.25	.22	37	.24	.25	.24	.24	.24
16	.25	.25	.25	.25	.25	38	.25	.25	.25	.25	.26
17	.25	.25	.25	.24	.24	39	.24	.25	.26	.25	.25
18	.24	.24	.24	.24	.24	40	.25	.26	.25	.25	.25
19	.25	.25	.25	.25	.25	41	.25	.25	.25	.25	.25
20	.25	.25	.25	.24	.24	42	.24	.25	.25	.24	.25
21	.25	.25	.26	.25	.25	43	.24	.25	.25	.24	.25
22	.25	.24	.24	.24	.25	44	.25	.25	.25	.25	.25

ITEM: TK-#13
LOCATION: RED HILL TANK FARM
DIAMETER:
INSPECTION: ULTRASONIC
INSP. DATE: 7/3/95
DONAN N.D.E. INSPECTIONS INC.

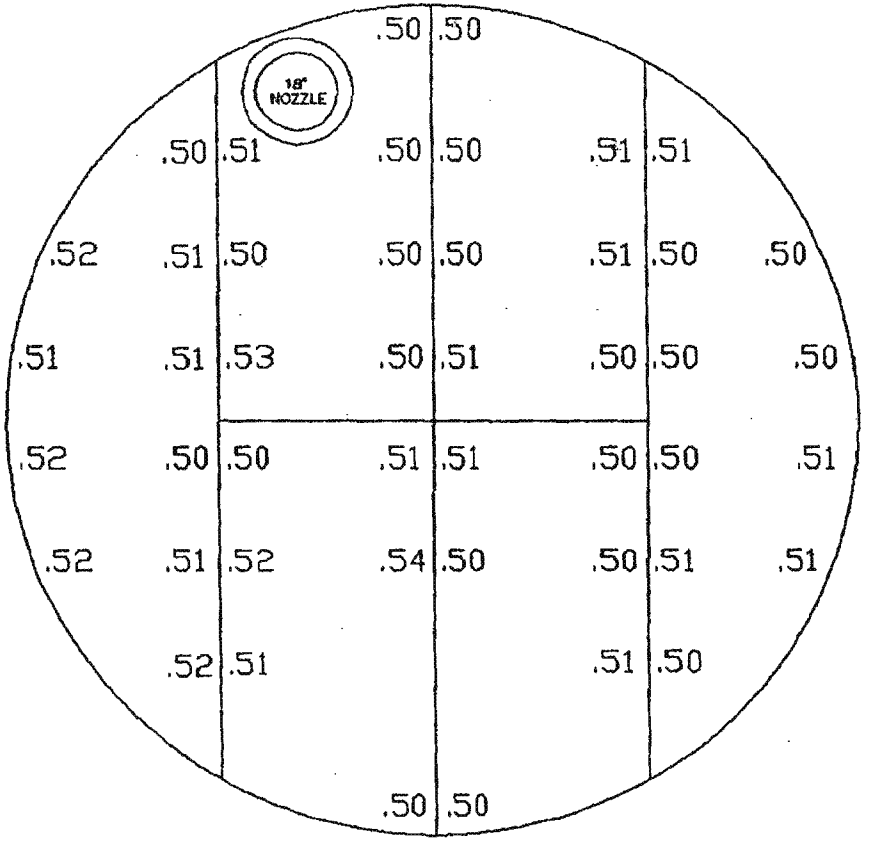
CLIENT: AMAN ENVIRONMENTAL

TITLE: 1ST. ASCENDING COURSE ULTRASONIC READINGS

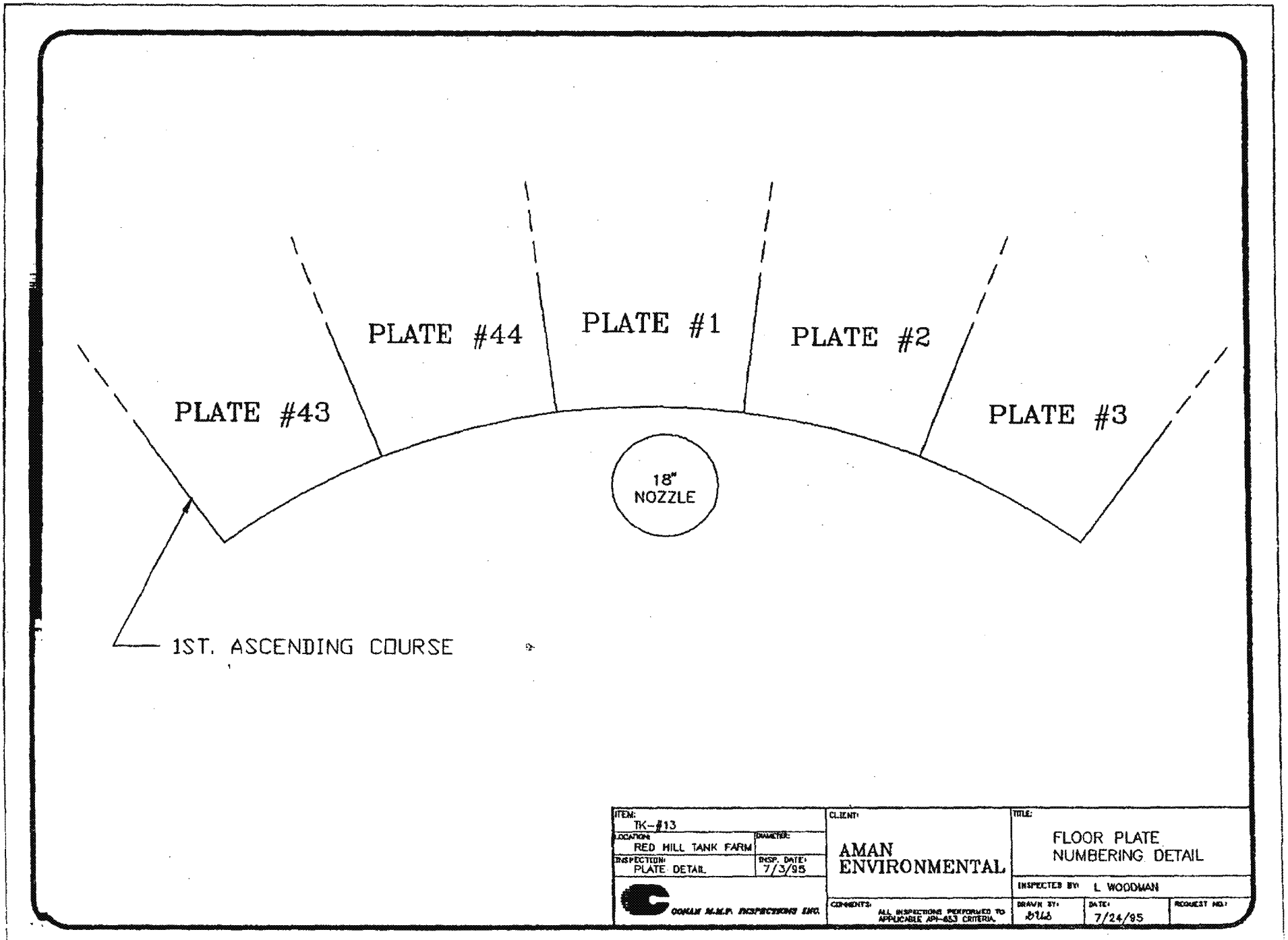
INSPECTED BY: L. WOODMAN

COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA

DRAWN BY: BHS
DATE: 7/24/95
REQUEST NO:



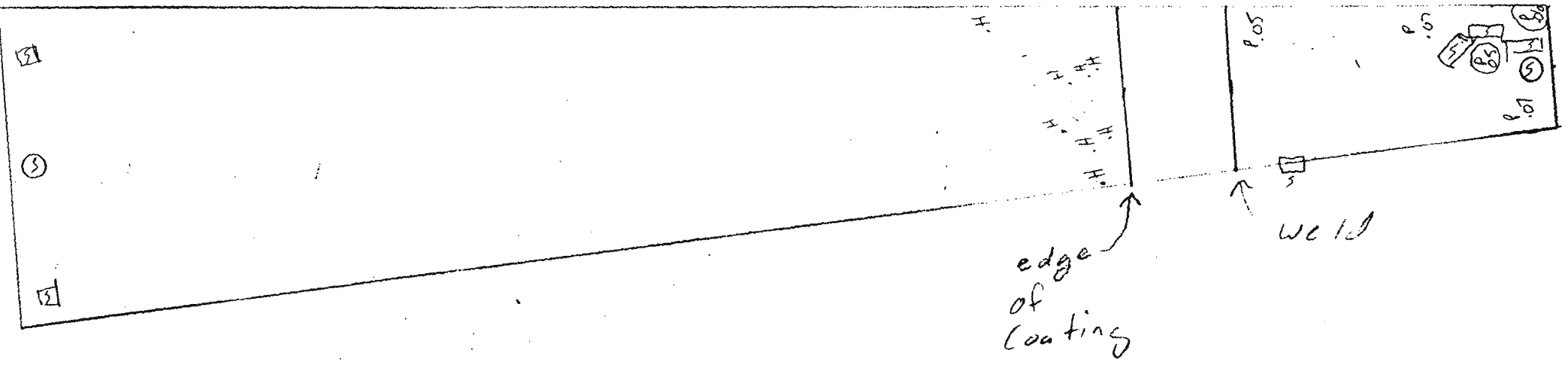
ITEM: TK-#13		CLIENT: AMAN ENVIRONMENTAL	TITLE: FLOOR ULTRASONIC READINGS
LOCATION: RED HILL TANK FARM	DIAMETER:		
INSPECTION: ULTRASONIC	INSP. DATE: 7/3/95		INSPECTED BY: L. WOODMAN
CORAM N.D.E. INSPECTIONS INC.		COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA.	DRAWN BY: BWB / DATE: 7/24/95 / REQUEST NO:



ITEM: TK-#13	CLIENT: AMAN ENVIRONMENTAL	TITLE: FLOOR PLATE NUMBERING DETAIL
LOCATION: RED HILL TANK FARM; DIAMETER:		
INSPECTION: PLATE DETAIL; INSP. DATE: 7/3/95		INSPECTED BY: L WOODMAN
OMAN N.D.E. INSPECTIONS INC.	COMMENTS: ALL INSPECTIONS PERFORMED TO APPLICABLE API-653 CRITERIA.	DRAWN BY: BWS; DATE: 7/24/95; REQUEST NO.:

top

bottom



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #1
DATE: 7-3-95
BY: L Woodman
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

No 5061

M.M.P. Form No. 0F rev. 2/92

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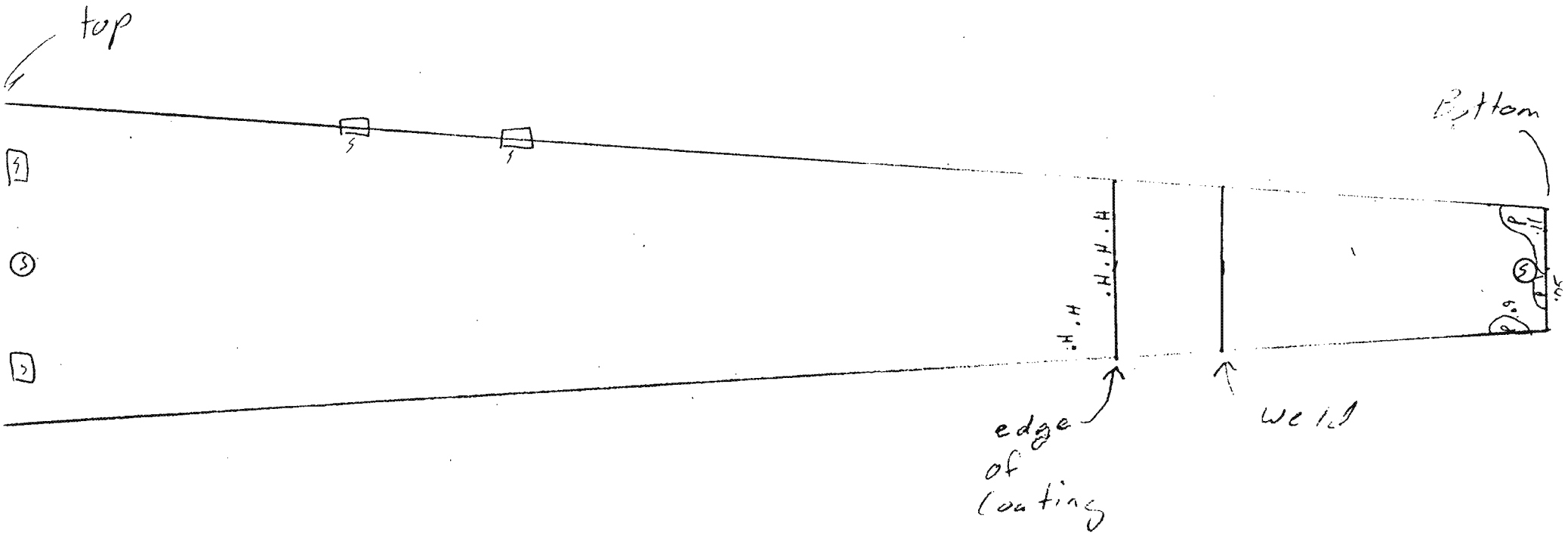

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310-597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 2
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. OP v. 2/92

No 5061

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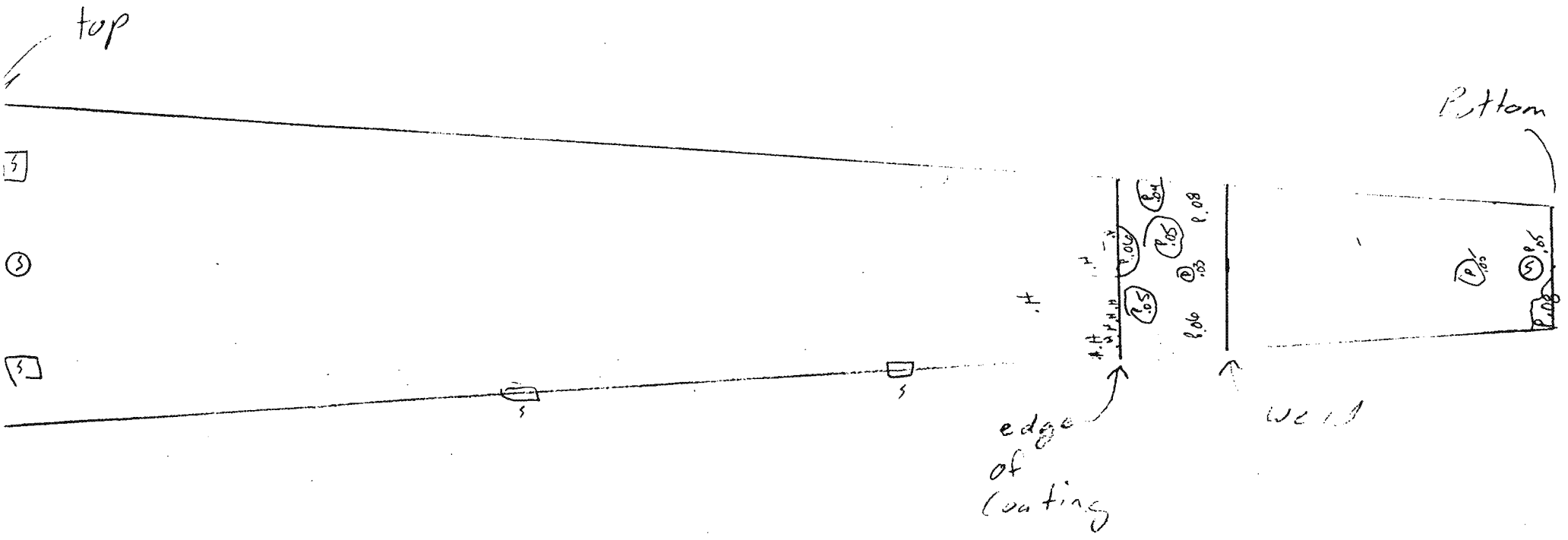

P - Pit
H - Hole in Coating
s - Surface patch
c - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #3
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEE OF

M.M.P. Form No. 0P\ v. 2/92

No 5061

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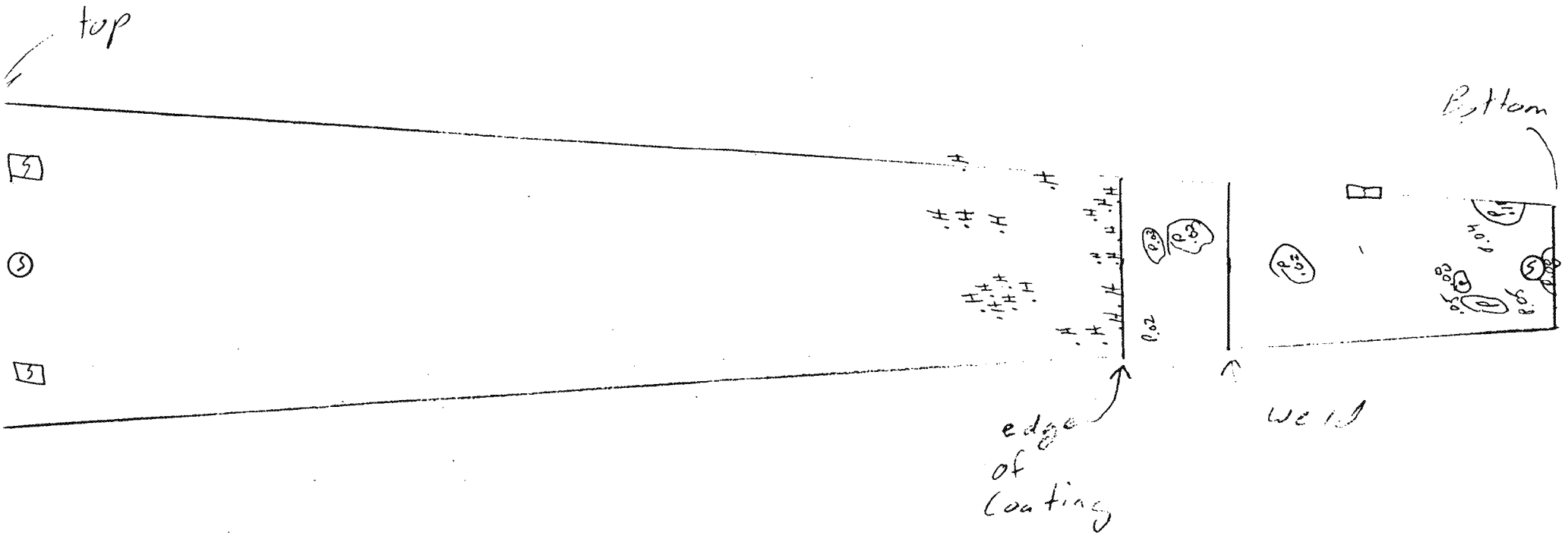


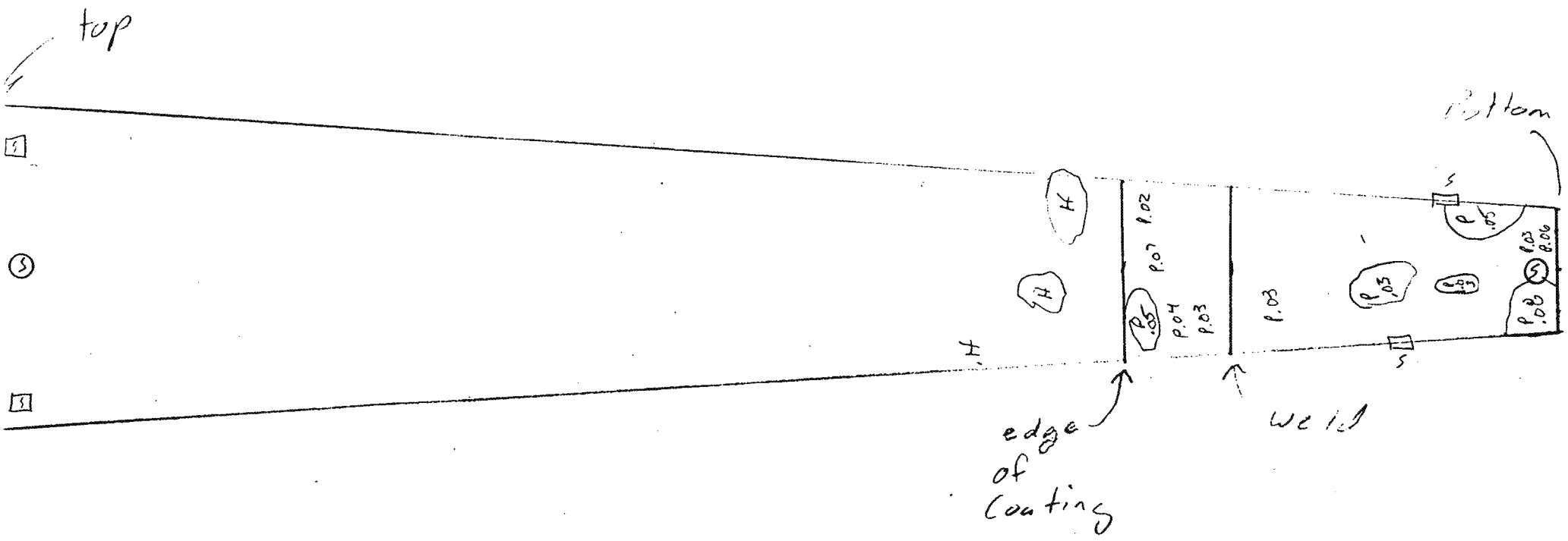
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate #4
BY:	L Woodman DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. OPI Rev. 2/92

Nº 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310.597-3932

PROJECT: Red Hill tank 15
ITEM: Plate #5
BY: L Woodman DATE: 7-5-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. OPL ...v. 2/92

No 5061

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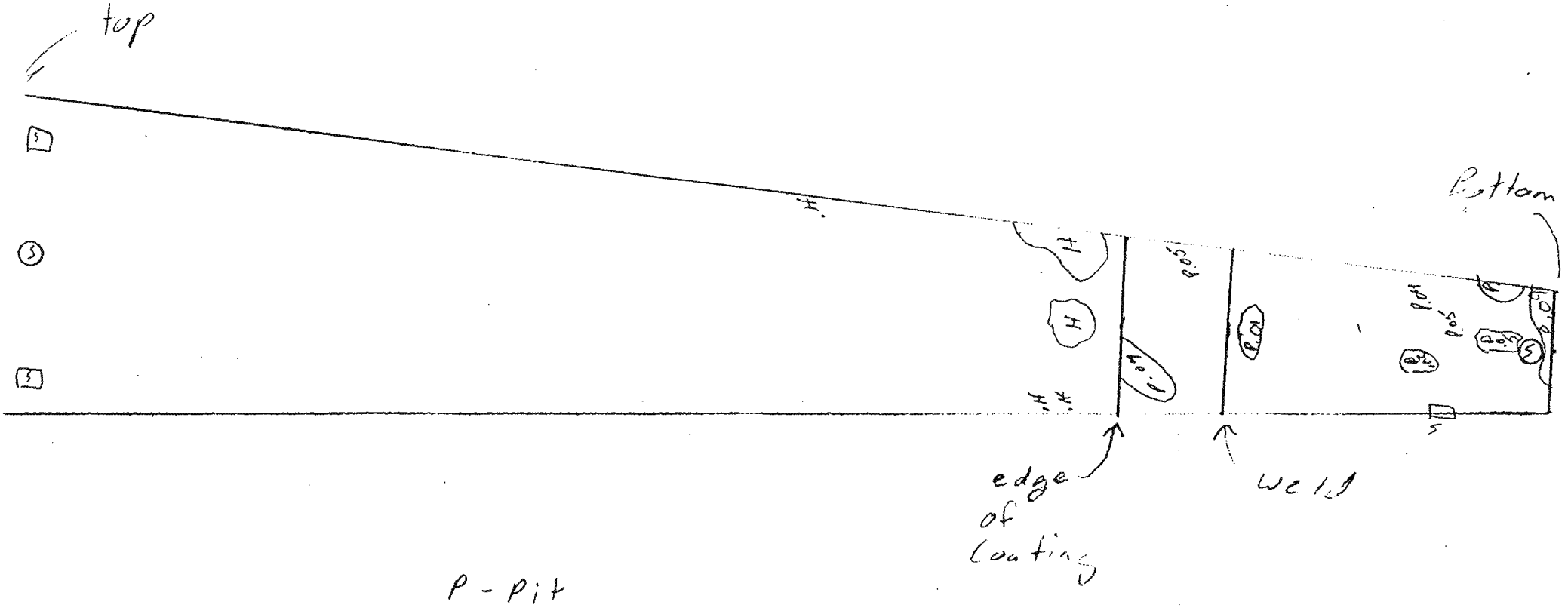


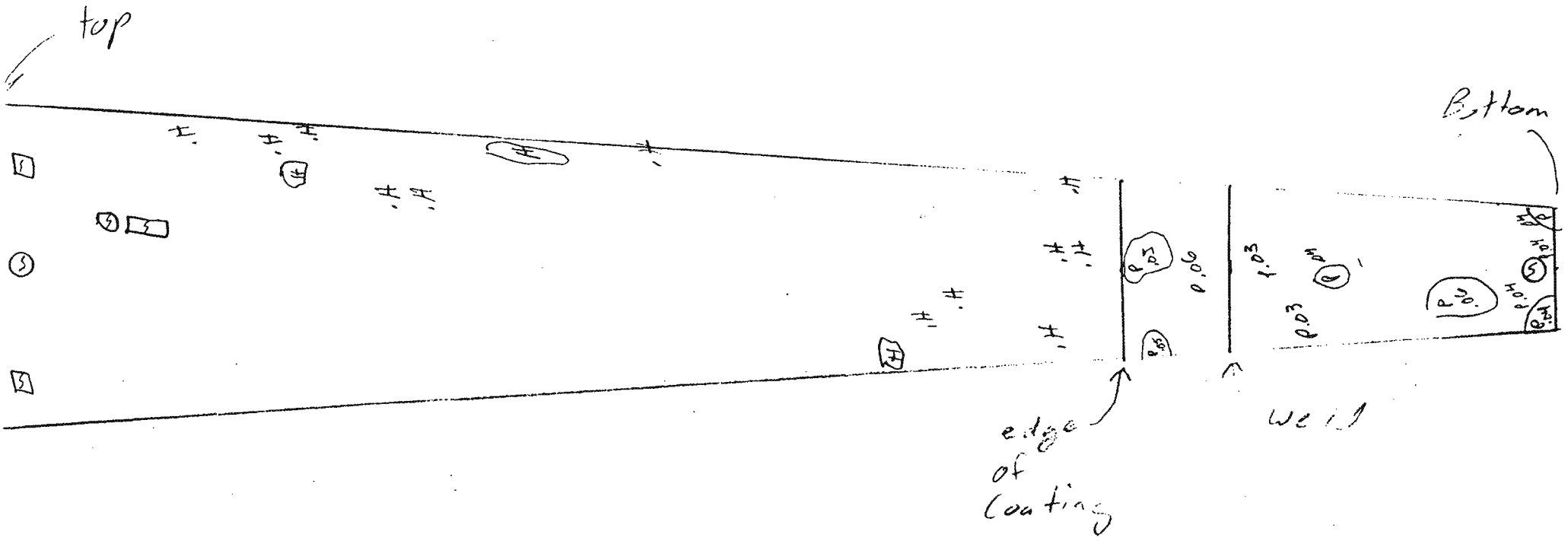
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310.597.3932

PROJECT: Red Hill tank 12
ITEM: Plate # 6
BY: L. Woodman
DATE: 7-5-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P v. 2/92

No 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310-597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #7
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. QPC v. 2/92

№ 5061

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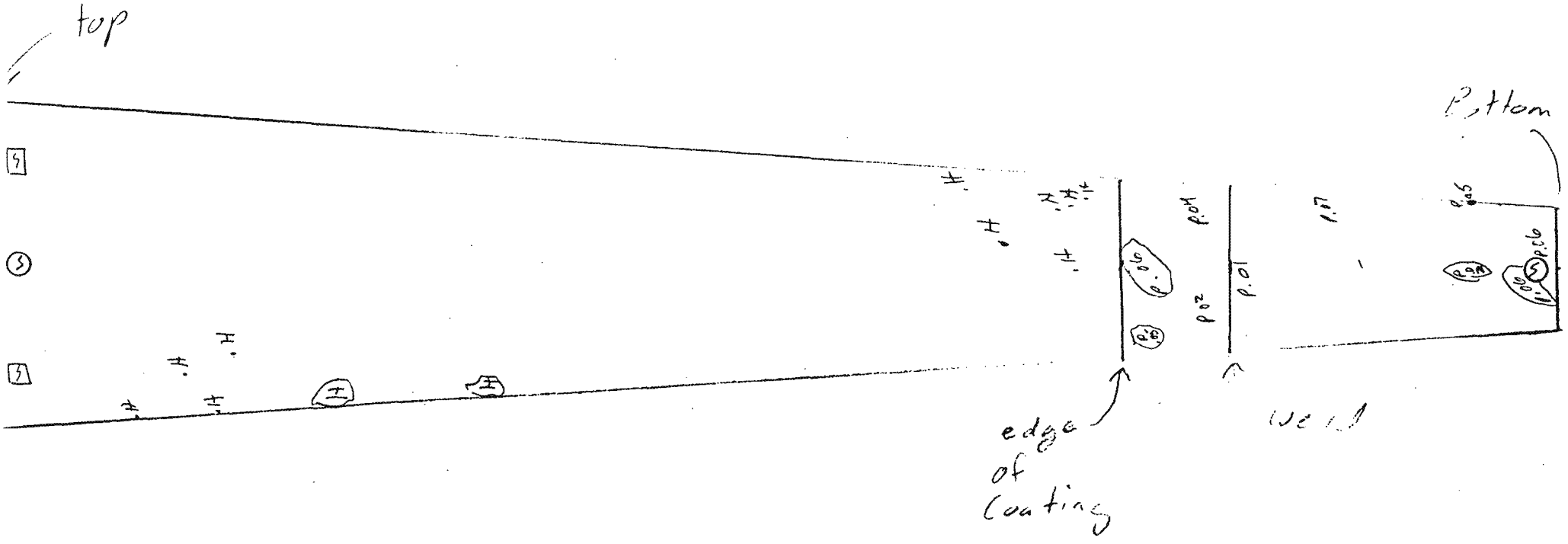

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #8	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P v. 2/92

Nº 5061

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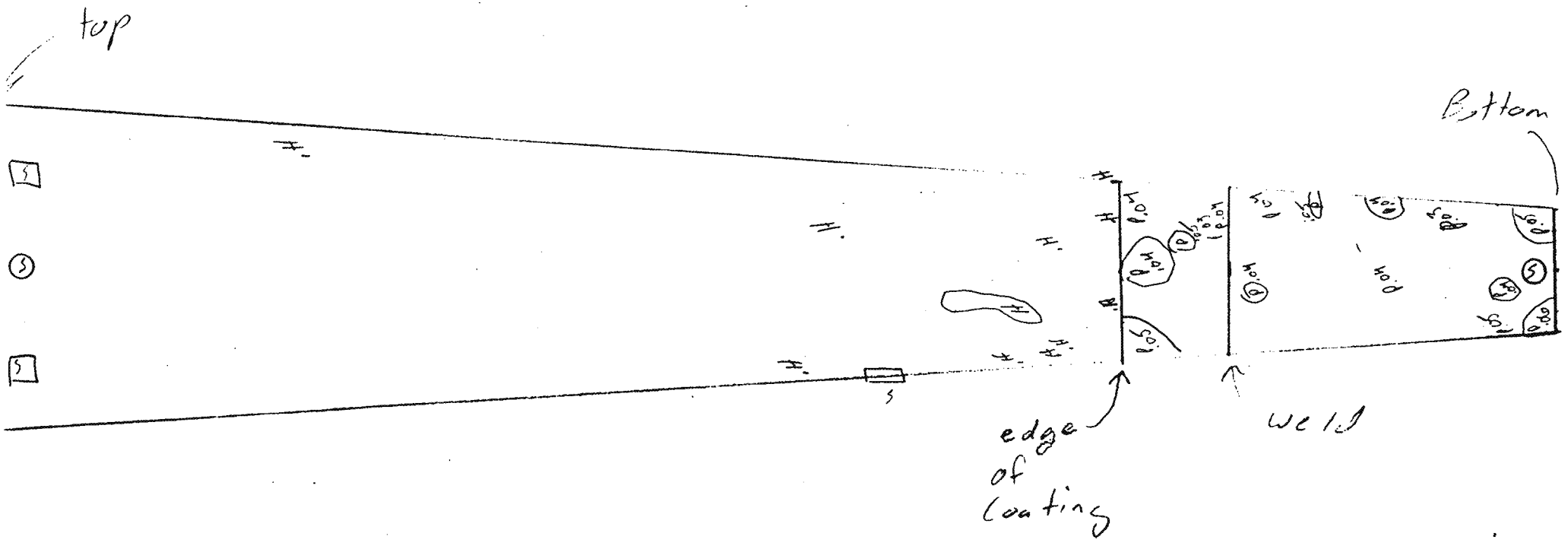

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate # 9	
BY: L. Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEE OF

M.M.P. Form No. 0P r. 2/92

Nº 5061

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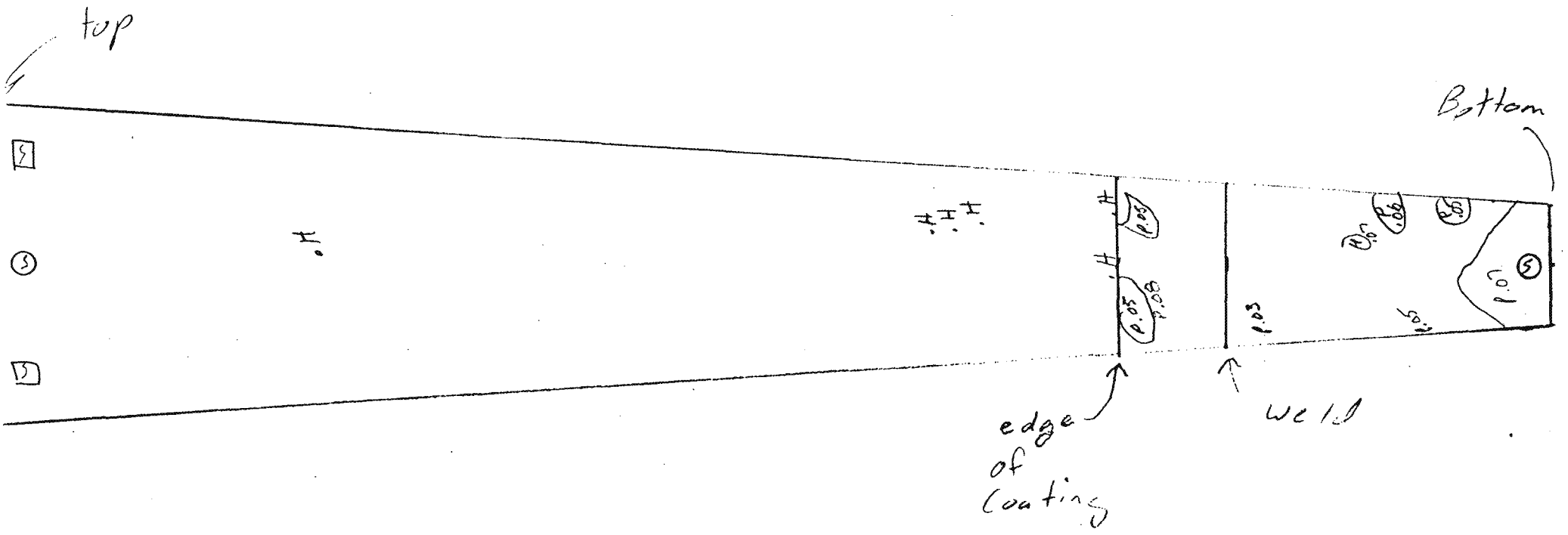

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #10
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 01 rv. 2/92

No 5061

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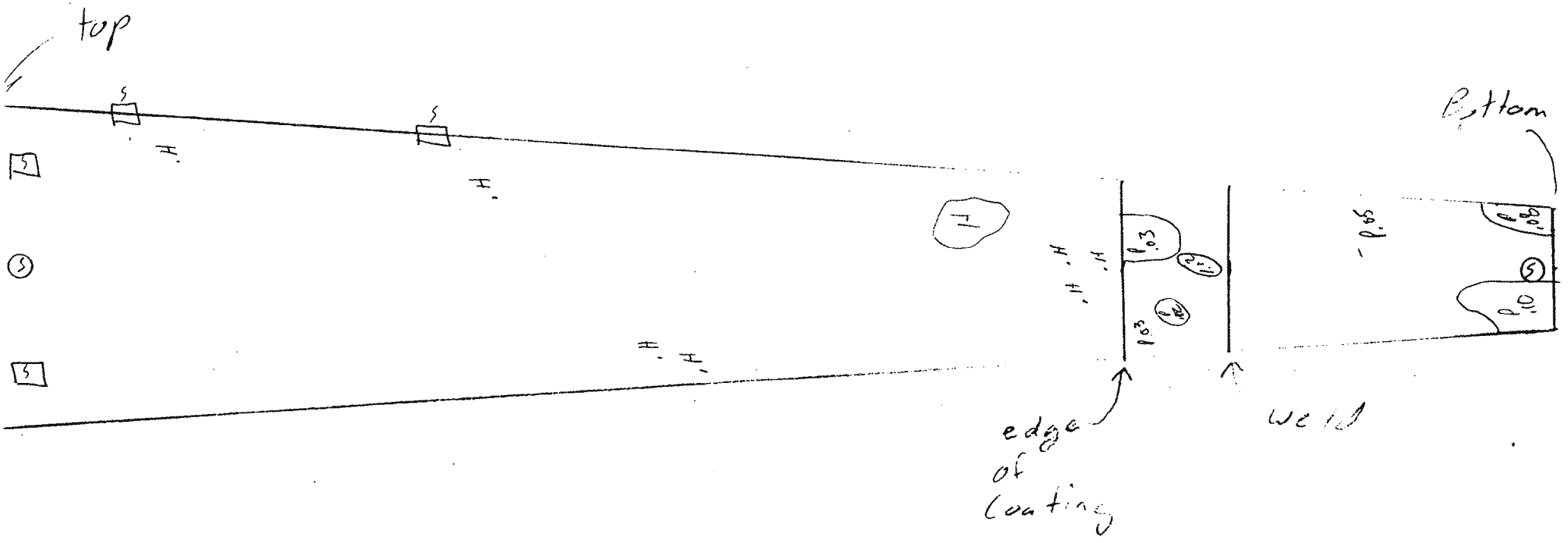

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310:597-3932
PROJECT:	Red Hill tank 13
ITEM:	Plate # 11
BY:	L Woodman
DATE:	7-3-95
REPORT NO:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. OP /. 2/92

Nº 5061

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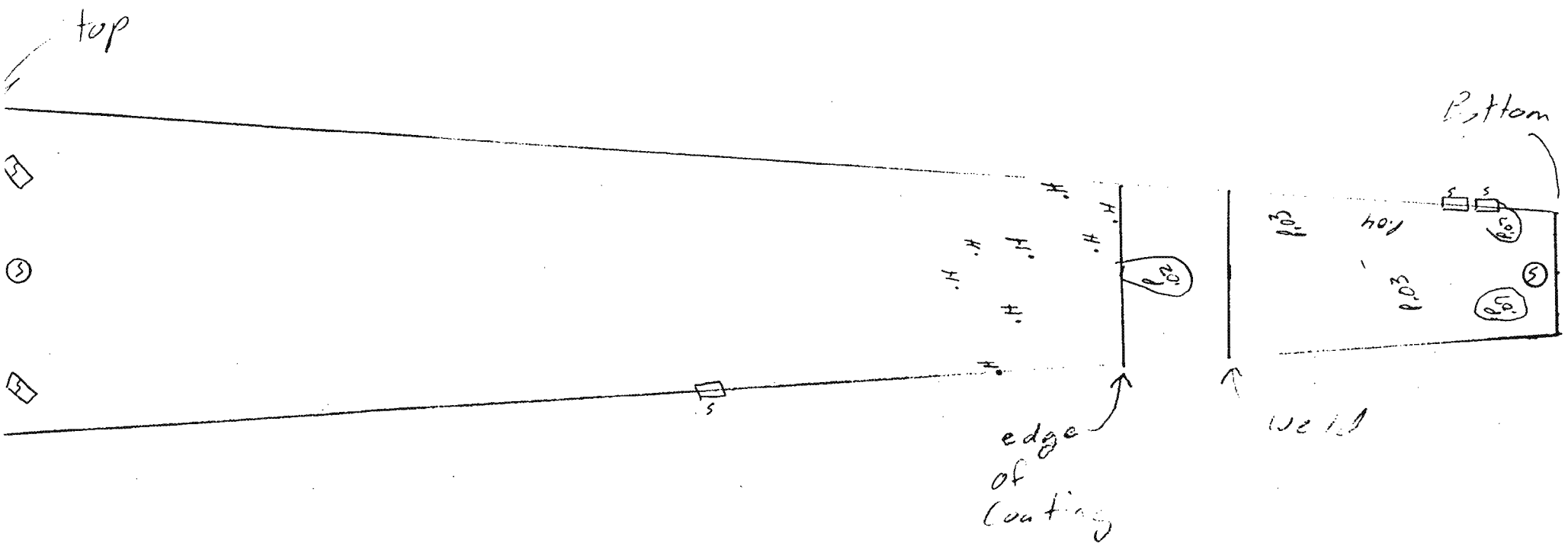

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310-597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #12
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0PC 2/92

Nº 5061

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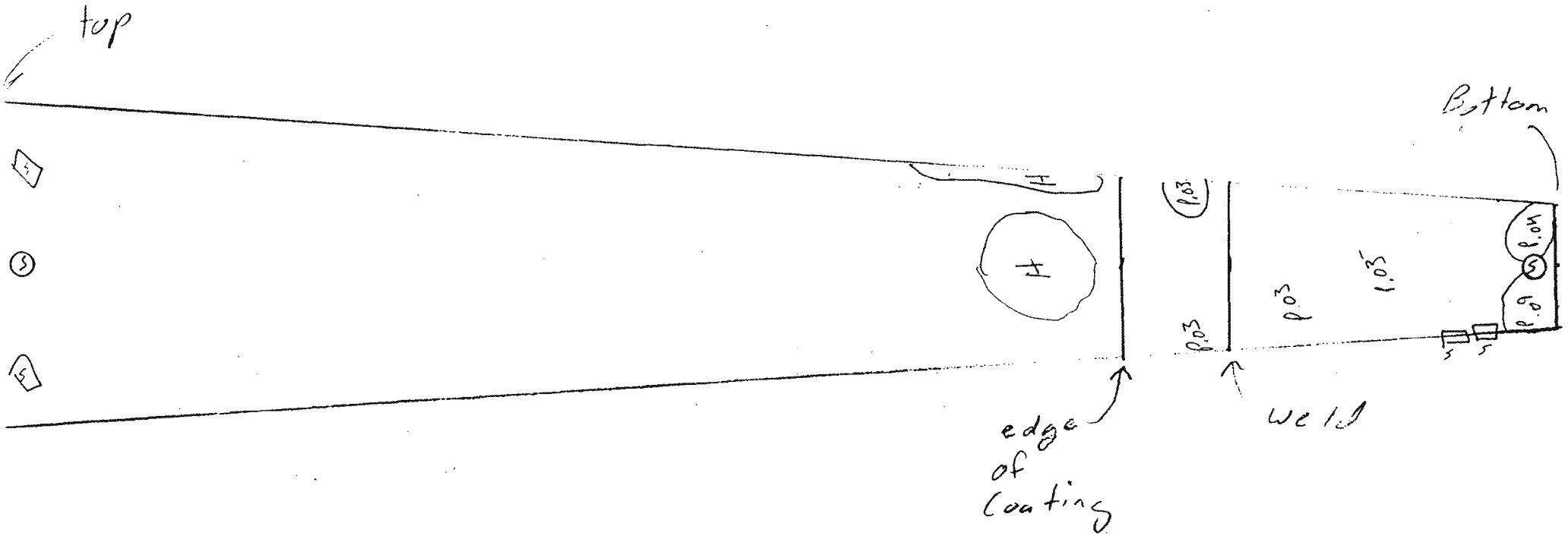

P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 13
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P0 : 2/92

Nº 5061

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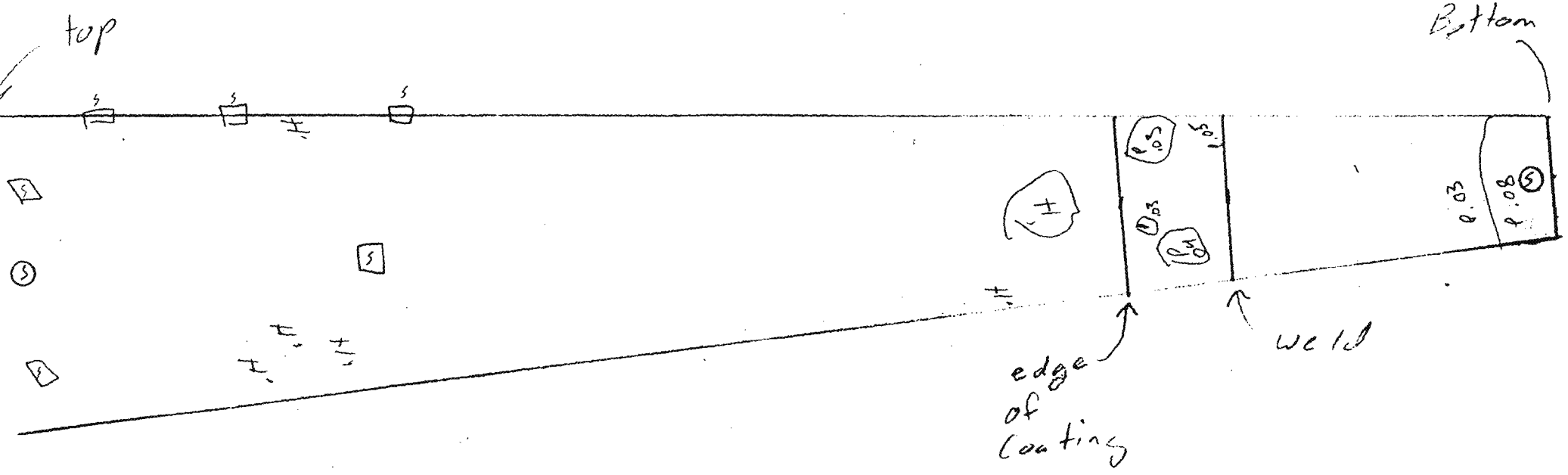
B-235

BWS028766



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310-597-3932

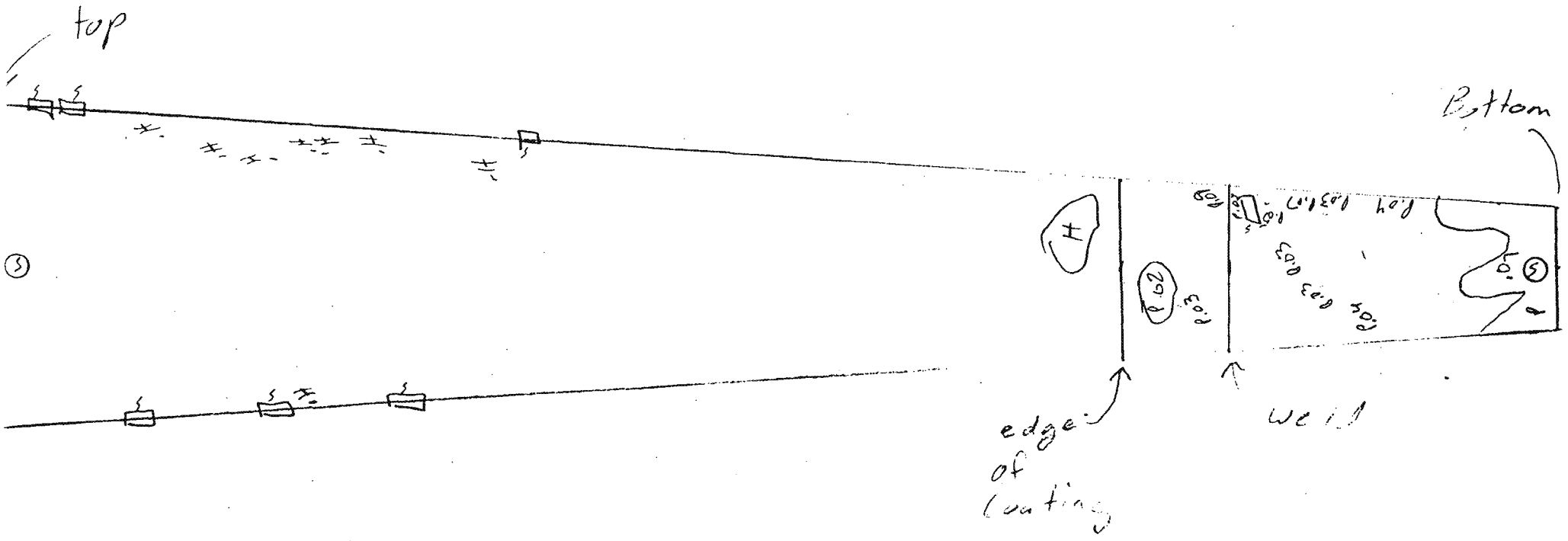
PROJECT: Red Hill tank 13
ITEM: Plate #14
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

№ 5061

RDHLCC0001395

M.M.P. Form No. 0PI : 2/92

BWS028767



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

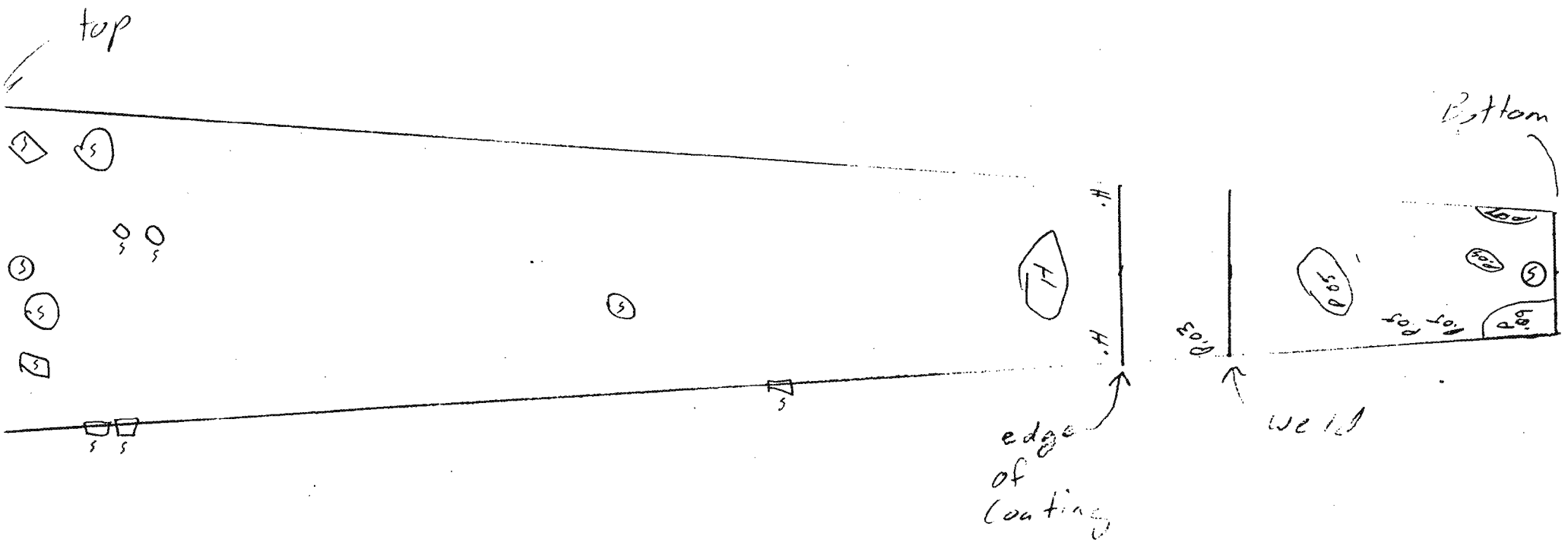
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 15
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P 1. 2/92

Nº 5061

RDHLCC0001396
BWS028768



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310:597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #16
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P[illegible] 2/92

Nº 5061

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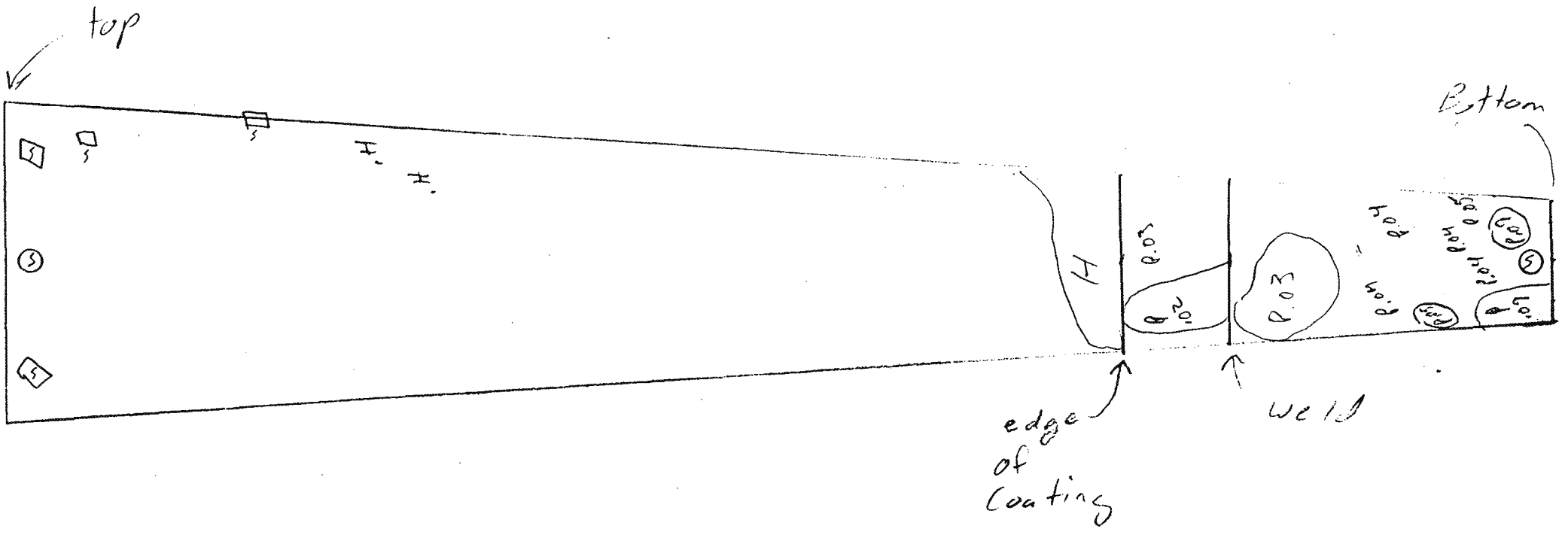
BWS028769



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

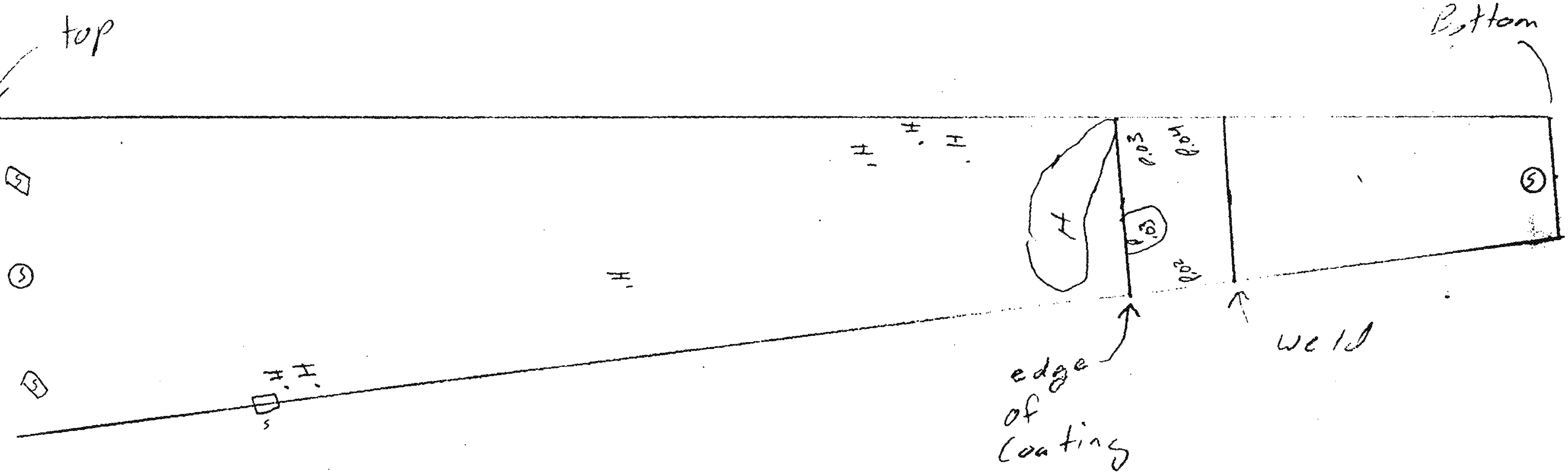
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #17
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P0 2/92

Nº 5061

RDHLCC0001398
BWS028770

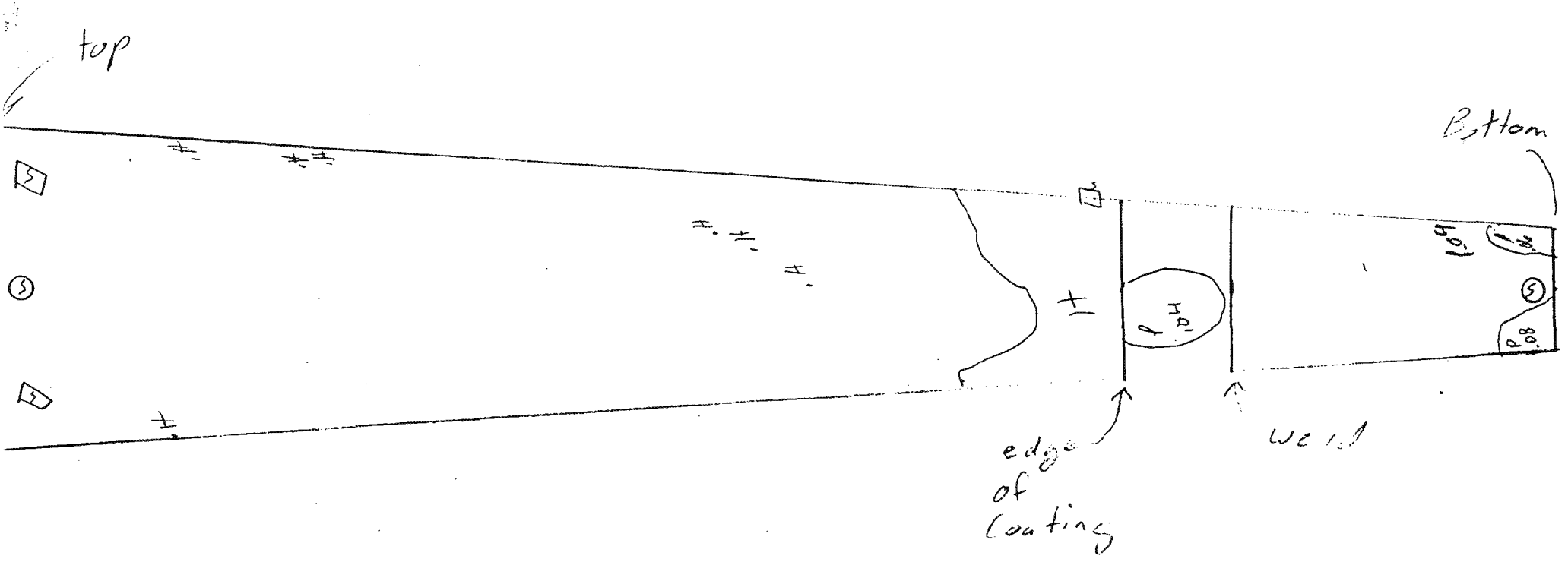


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310-597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate # 18 — DATE: 7-3-95
BY:	L Woodman
REPORT NO.:	
CLIENT:	Amer Environmental
REMARKS:	
	SHEET OF

№ 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

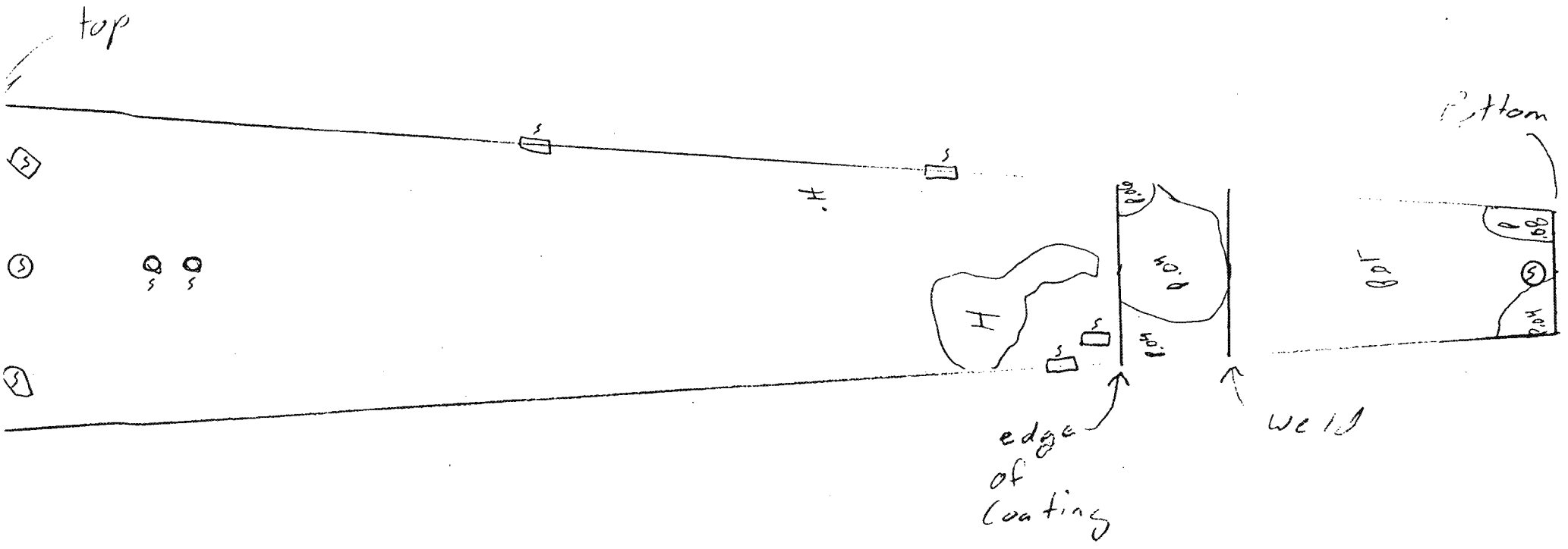
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #19
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P0 /. 2/92

No 5061

RDHLCC0001400
BWS028772



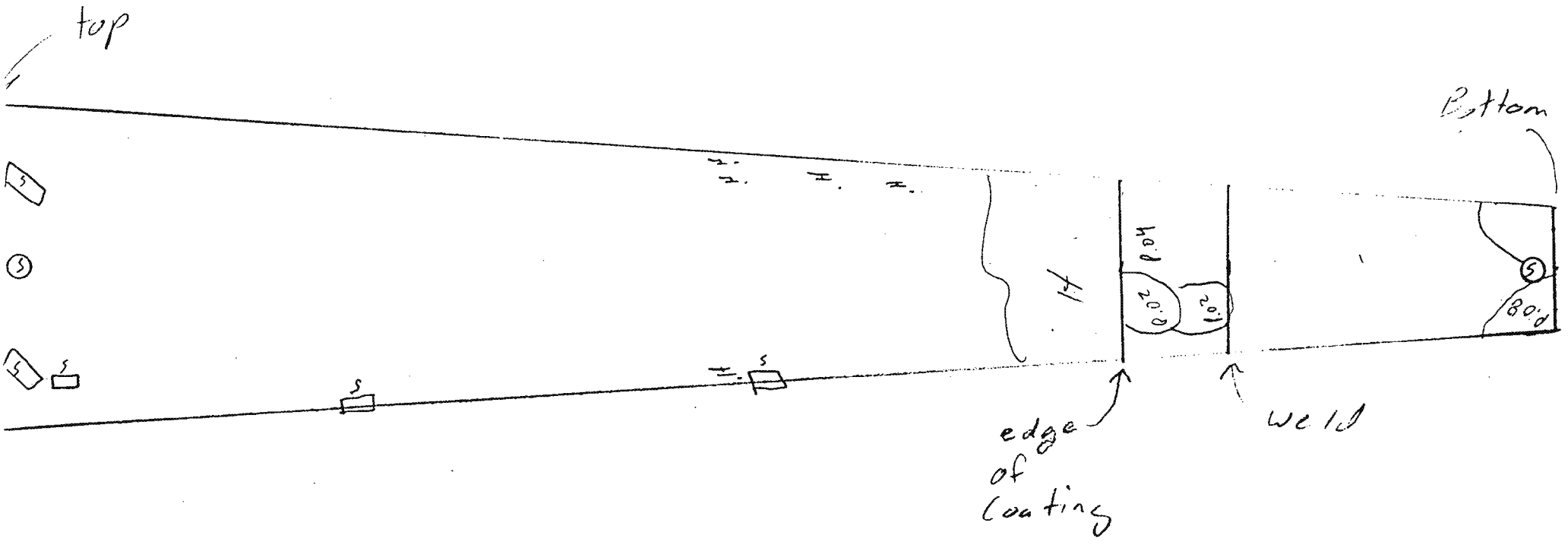
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 20
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. 0PC . 2/92

Nº 5061

RDHLCC0001401
BWS028773



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

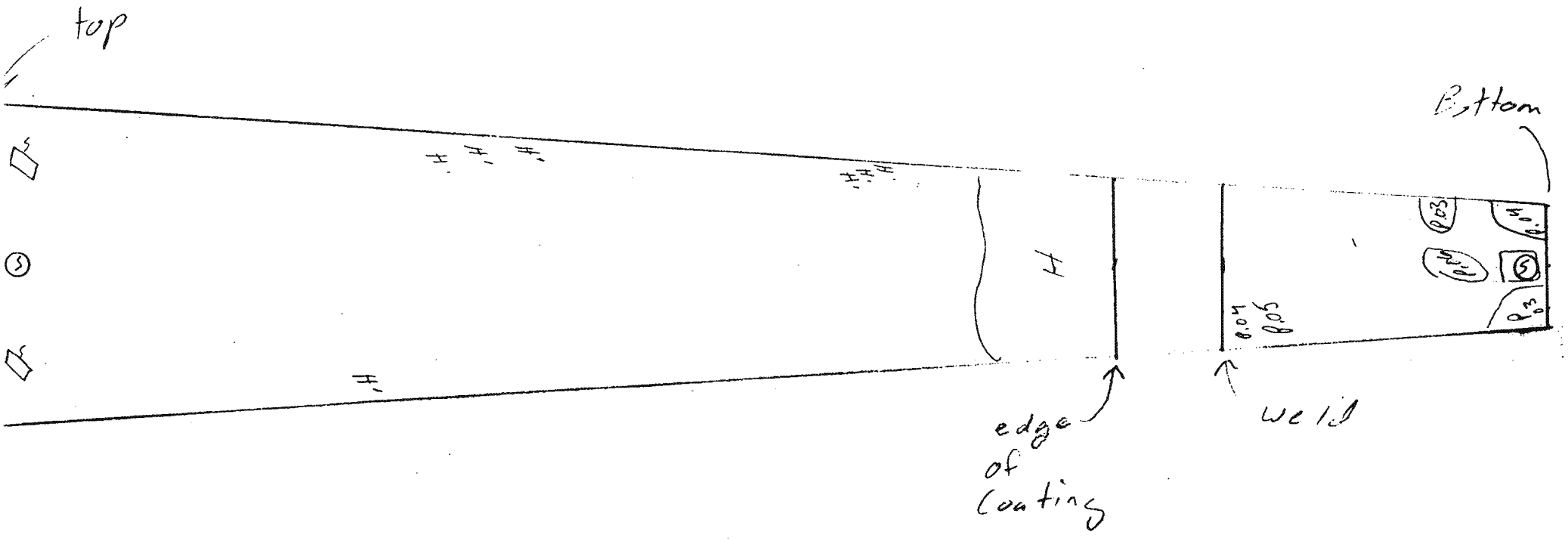
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #21
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P0 2/92

Nº 5061

RDHLCC0001402
BWS028774



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

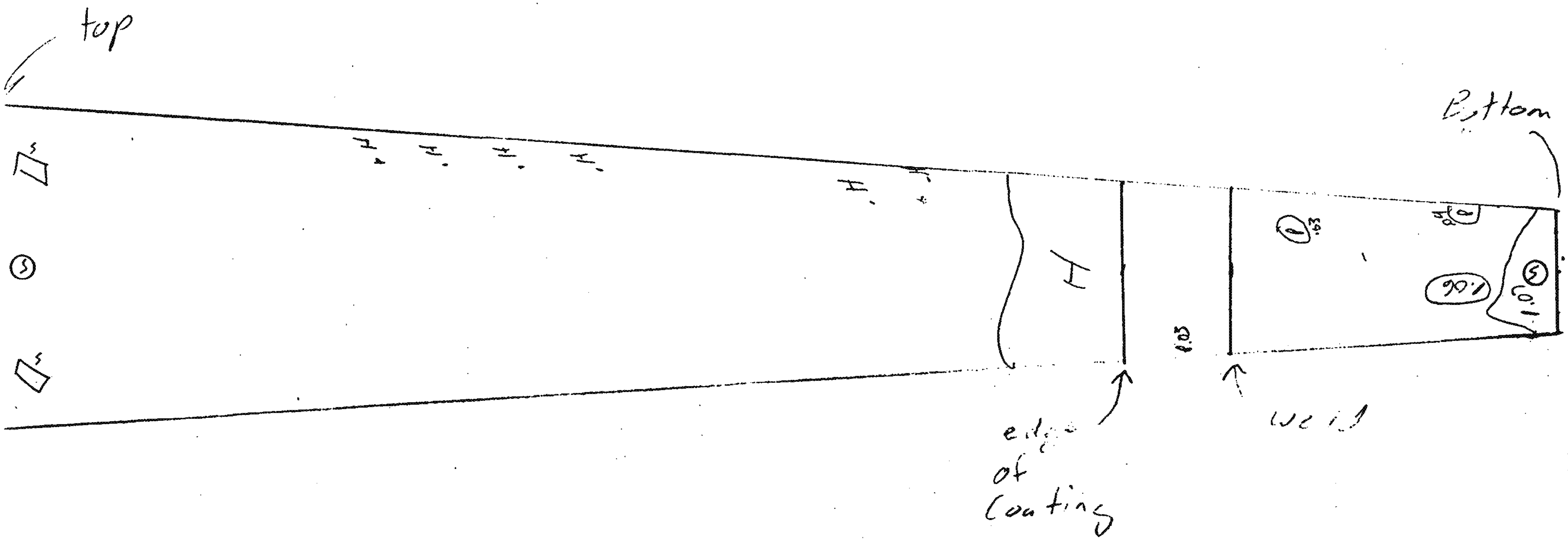
M.M.P. Quality Inspections, Inc.	310:597-3932
PROJECT: Red Hill tank 1	
ITEM: Plate # 22	
BY: L Woodrum	DATE: 7-5-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. OPL 2/92

№ 5061

B-235

RDHLCC0001403
BWS028775



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

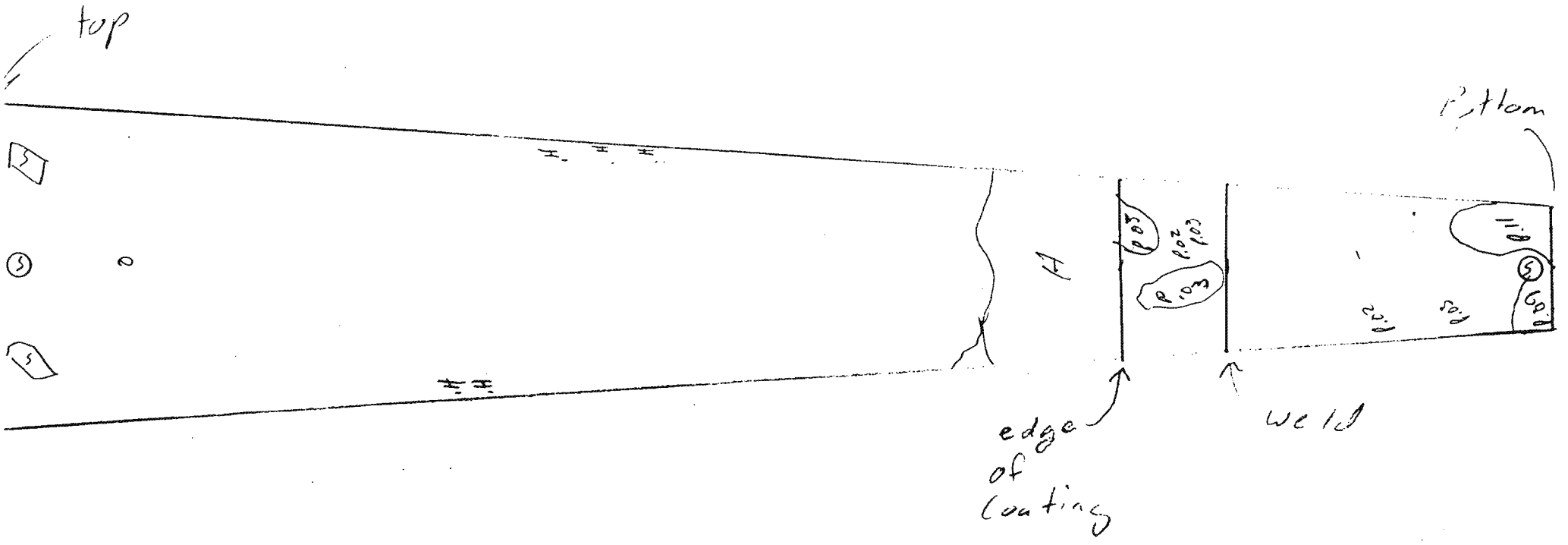
M.M.P. Quality Inspections, Inc. 310/597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate # 23
BY:	L Woodman — DATE: 7-3-95
REPORT NO.:	
CLIENT:	Aman Environmental
REMARKS:	
SHEET	OF

®M.M.P. Form No. 0P(2/92

№ 5061

RDHLCC0001404
BWS028776



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

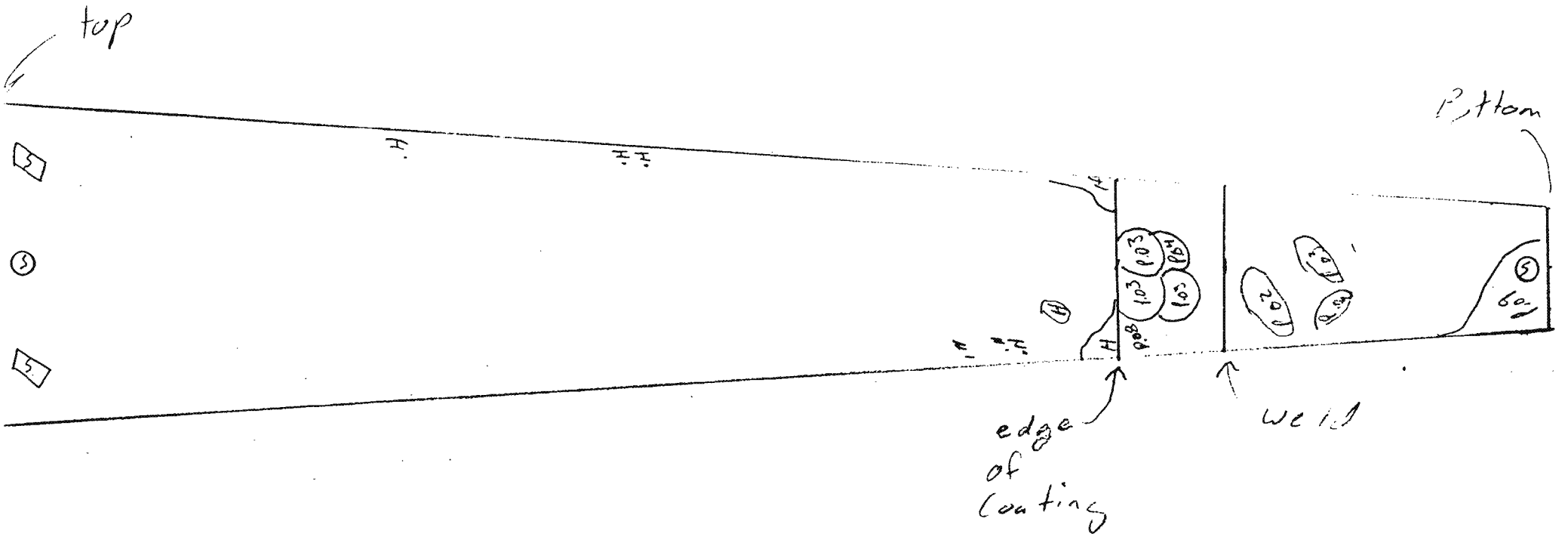
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 24
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. OPI · 2/92

Nº 5061

RDHLCC0001405
BWS028777



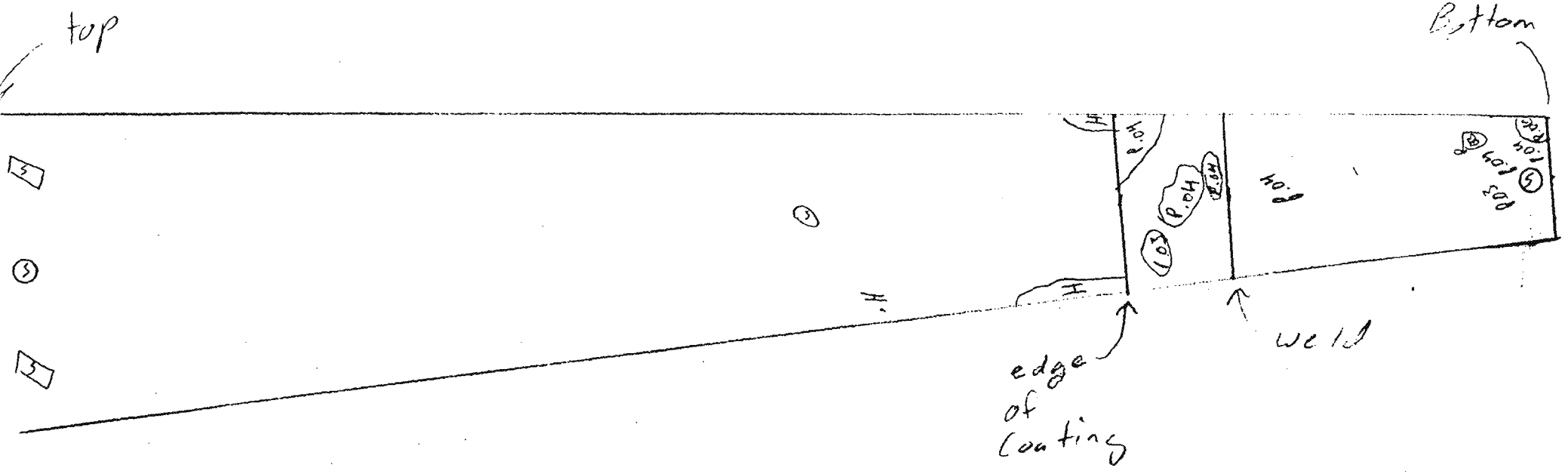
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate # 25	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. OPC . 2/92

Nº 5061

RDHLCC0001406
BWS028778



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310-597-3932

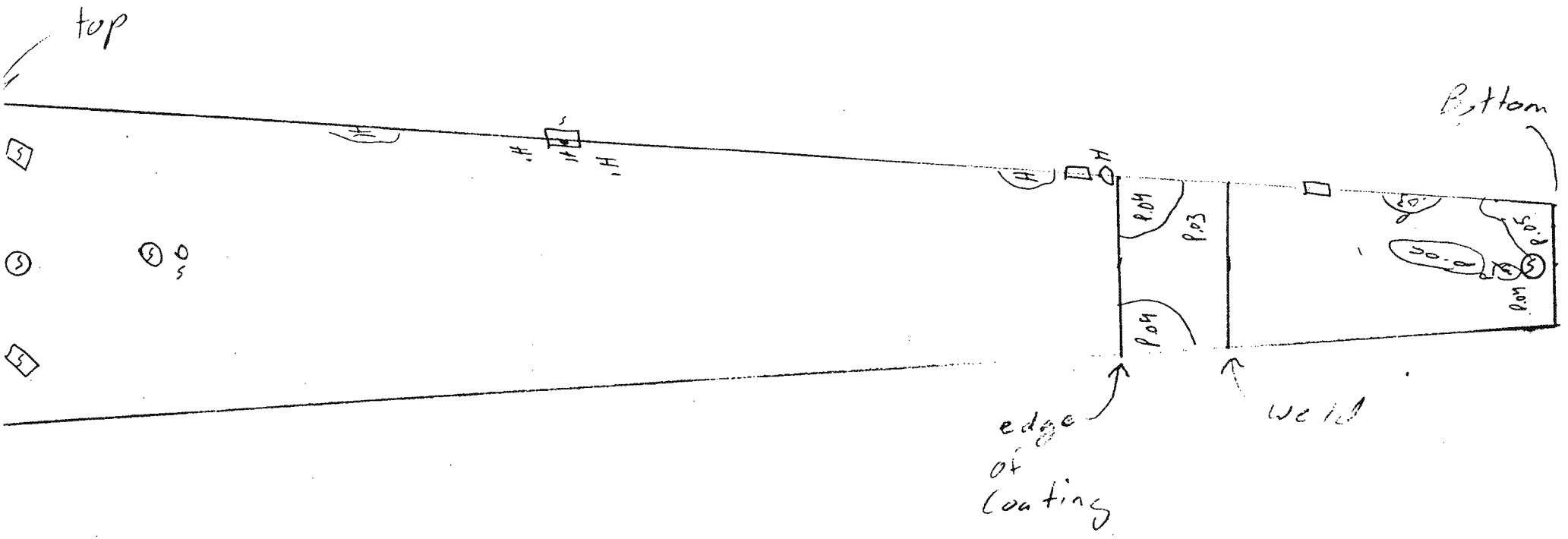
PROJECT: Red Hill Tank 12
ITEM: Plate # 26
BY: L Woodman DATE: 7-5-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

Nº 5061

M.M.P. Form No. DPC 2/92

RDHLCC0001407

BWS028779



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

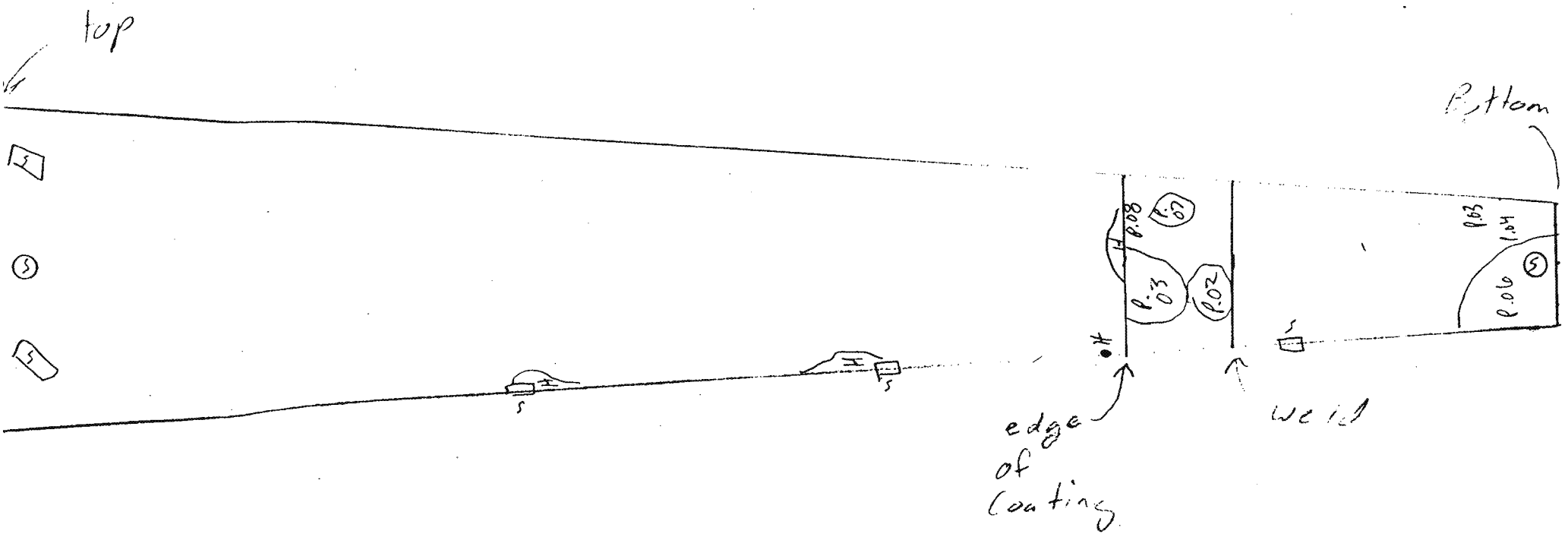
M.M.P. Quality Inspections, Inc.
310-597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 27
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. OPC 2/92

Nº 5061

RDHLCC0001408
BWS028780



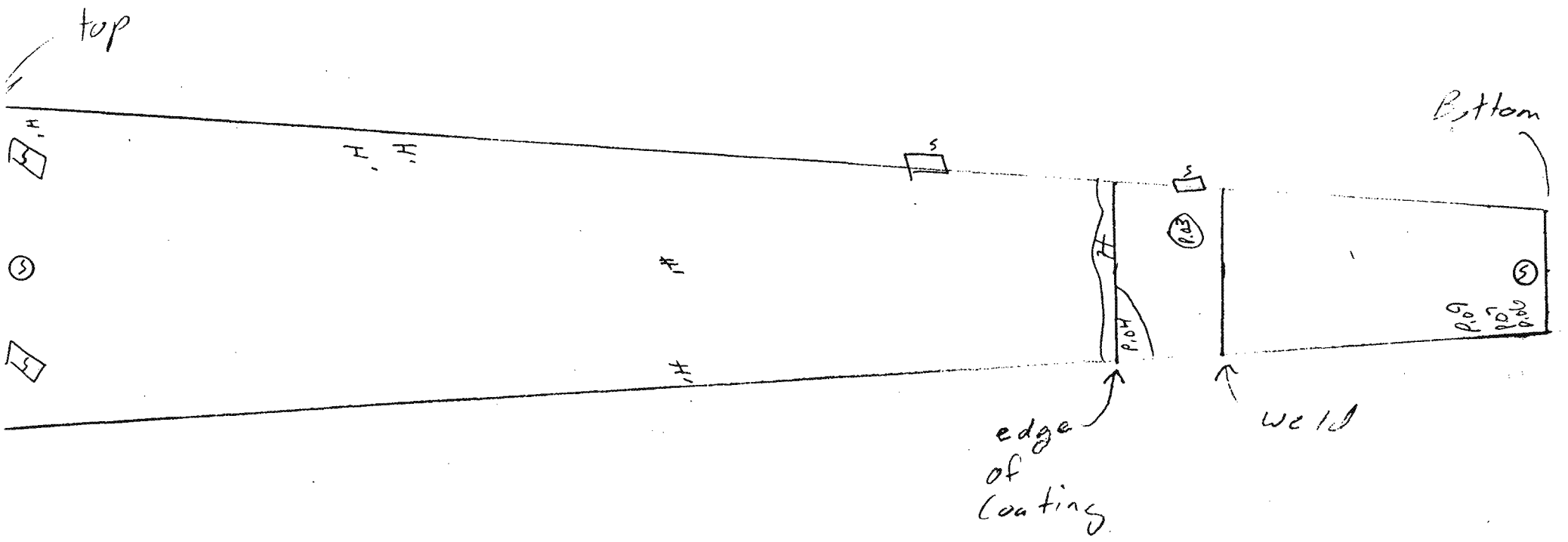
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate # 28
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. OP Rev. 2/92

Nº 5061

RDHLCC0001409
BWS028781



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

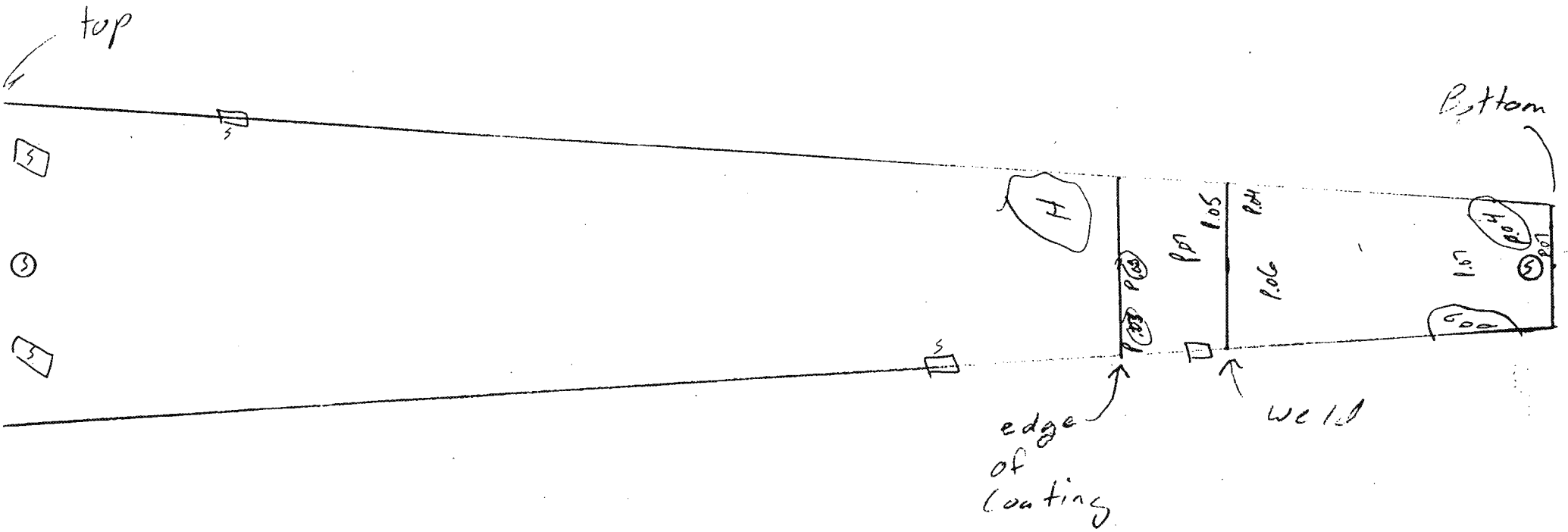
M.M.P. Quality Inspections, Inc.
310.597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #29
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

*M.M.P. Form No. OP r. 2/92

Nº 5061

RDHLCC0001410
BWS028782



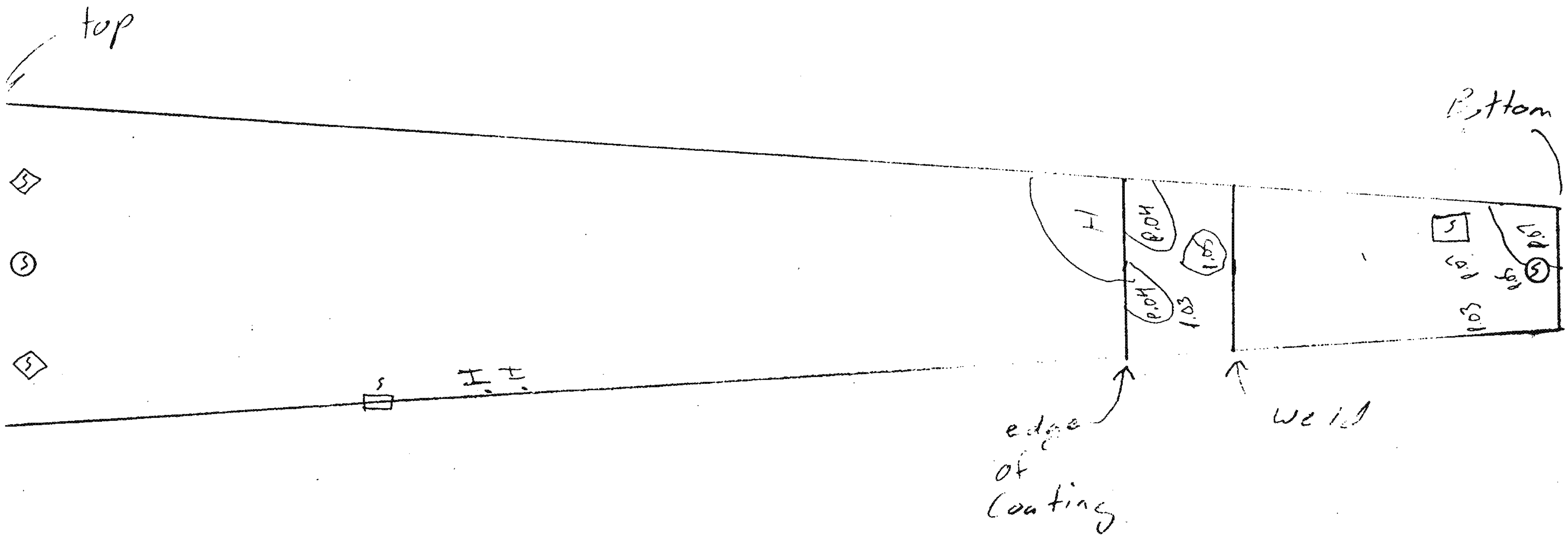
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate # 30	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P v. 2/92

Nº 5061

RDHLCC0001411
BWS028783



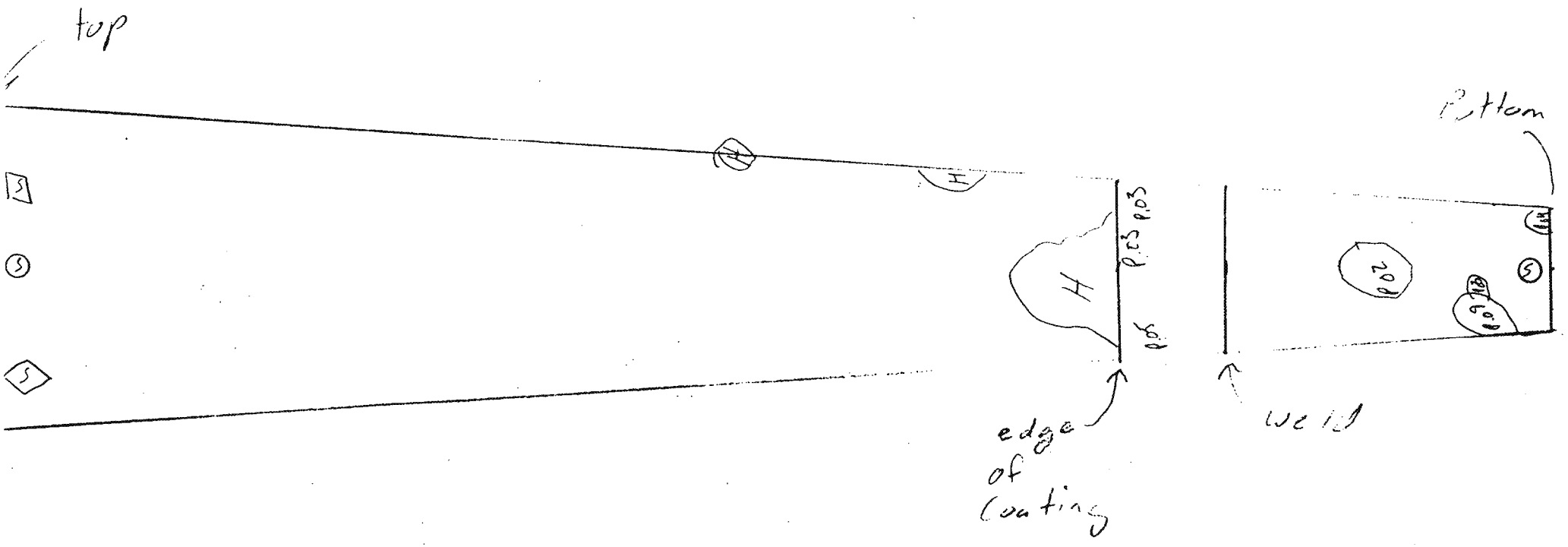
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932	
PROJECT: Red Hill tank 13	
ITEM: Plate #31	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
SHEET	OF

M.M.P. Form No. 0P v. 2/92

№ 5061

RDHLCC0001412
BWS028784

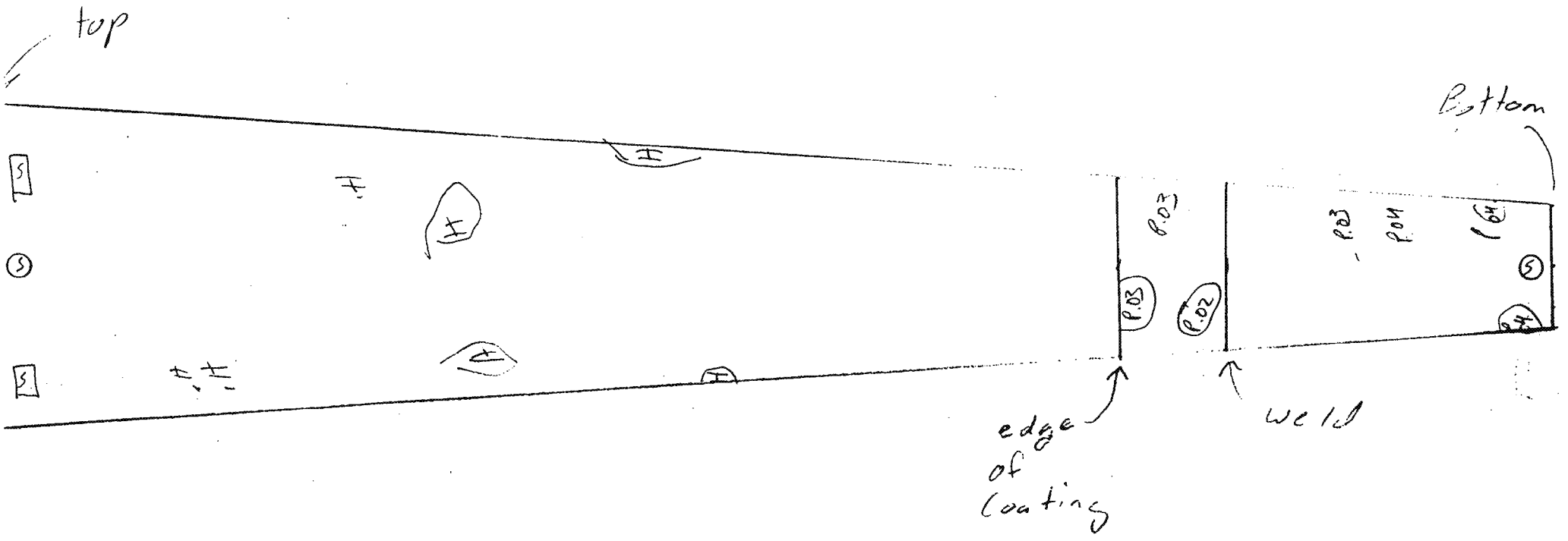


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate # 32	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEE OF

M.M.P. Form No. 0P\ /. 2/92

Nº 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

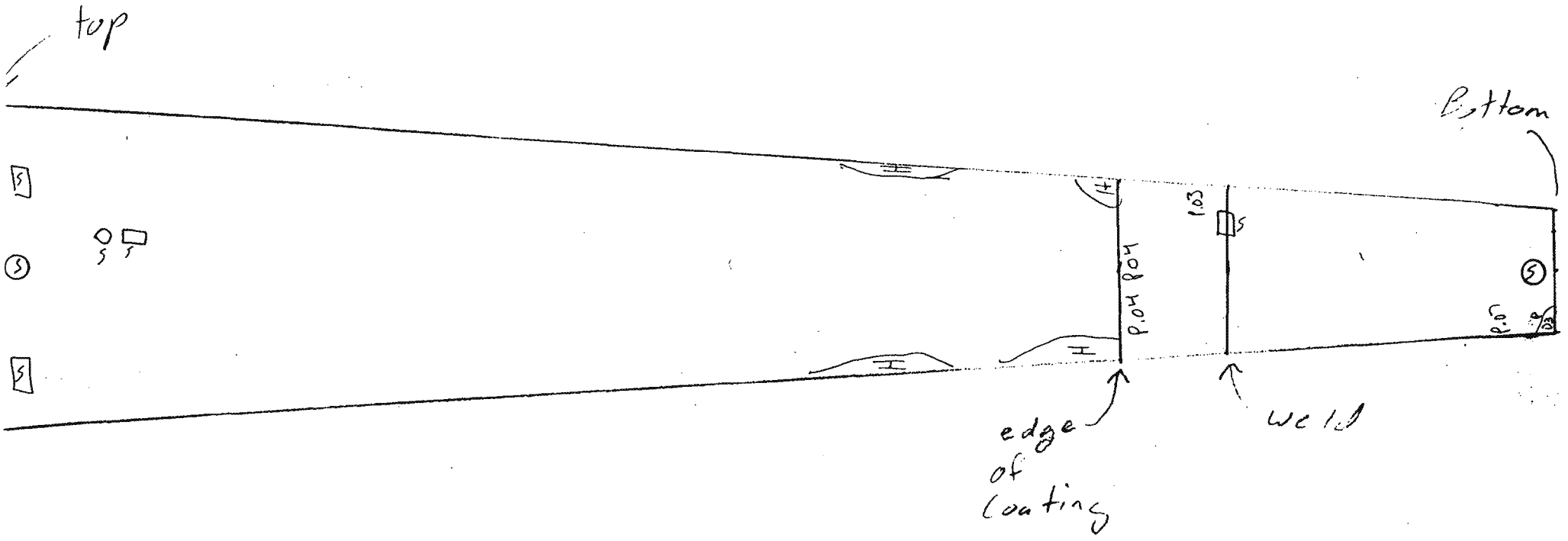
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #33
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. OPY v. 2/92

Nº 5061

RDHLCC0001414
BWS028786



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

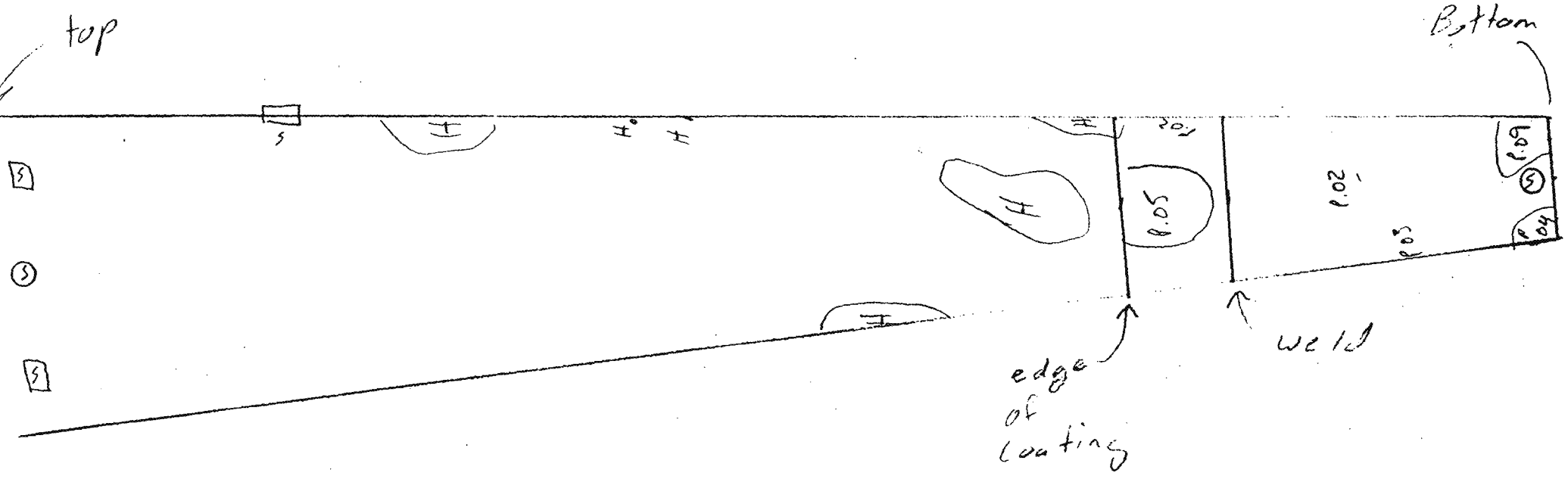
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #34
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P v. 2/92

No 5061

RDHLCC0001415
BWS028787



P - Pit
H - Hole in coating
S - Surface patch
C - coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932

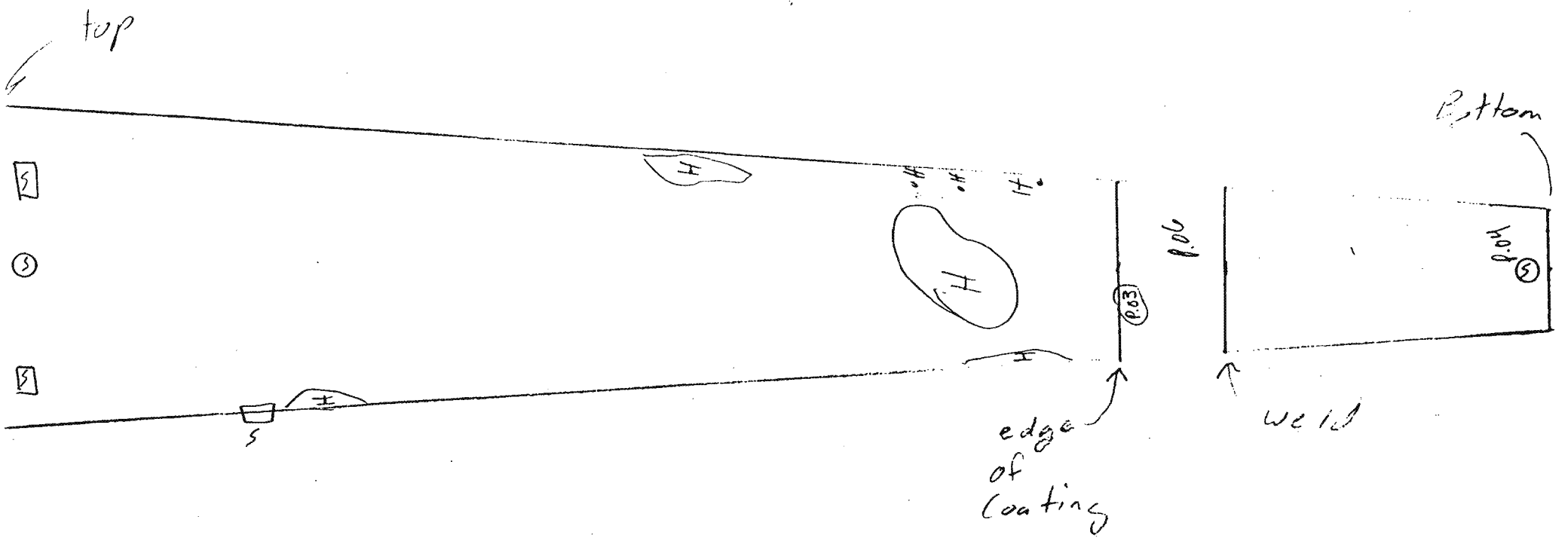
PROJECT: Red Hill tank 13
ITEM: Plate # 35
DATE: 7-3-95
BY: L Woodman
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

№ 5061

M.M.P. Form No. OPI 2/92

RDHLCC0001416

BWS028788



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

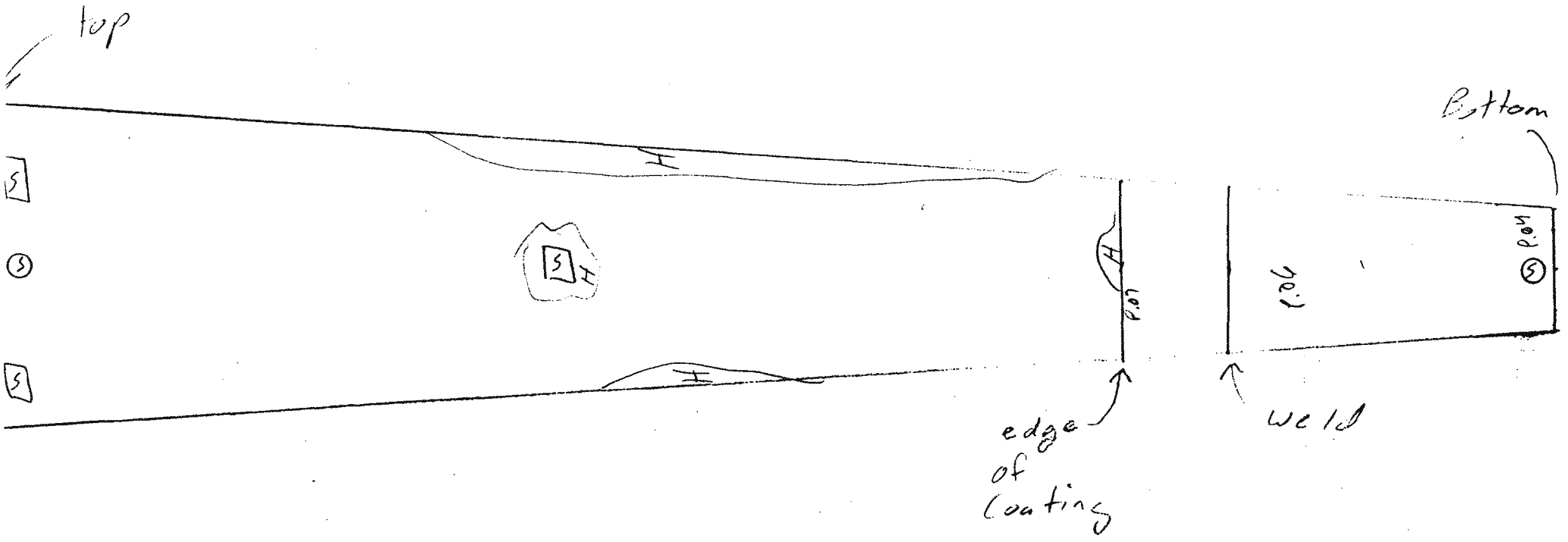
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 36
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEE OF

M.M.P. Form No. OP /. 2/92

Nº 5061

RDHLCC0001417
BWS028789



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

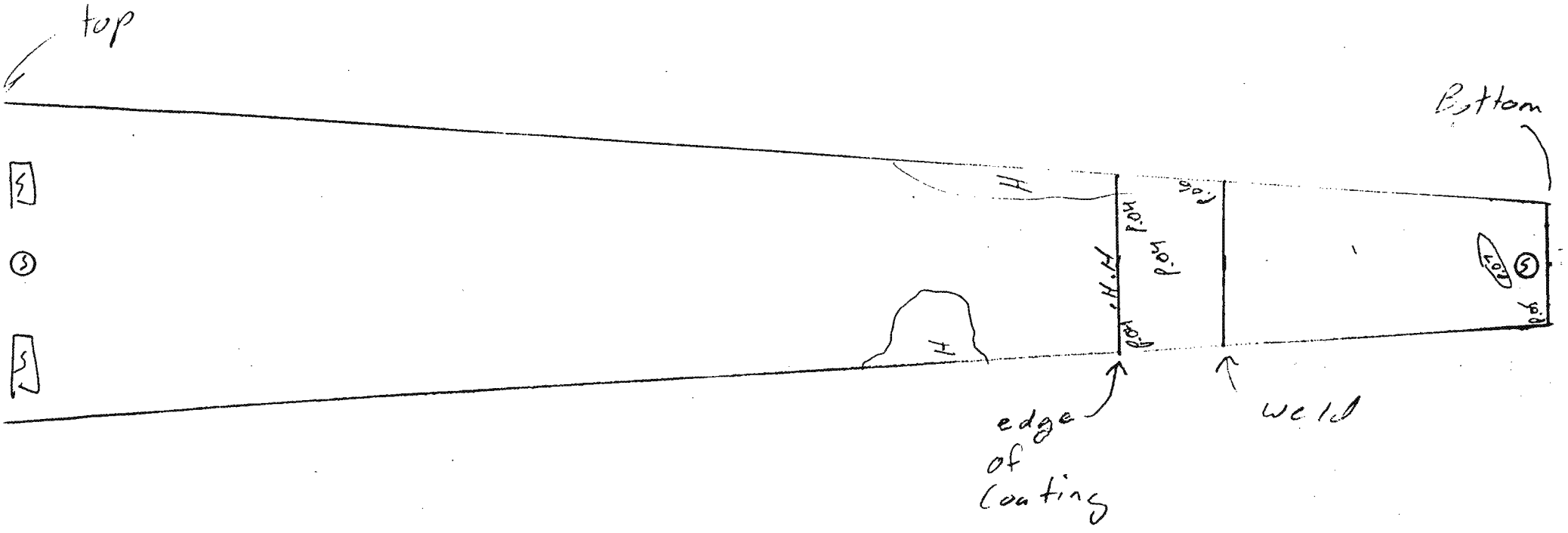
M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #37	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 0P0[illegible] v. 2/92

№ 5061

B-235

RDHLCC0001418
BWS028790



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

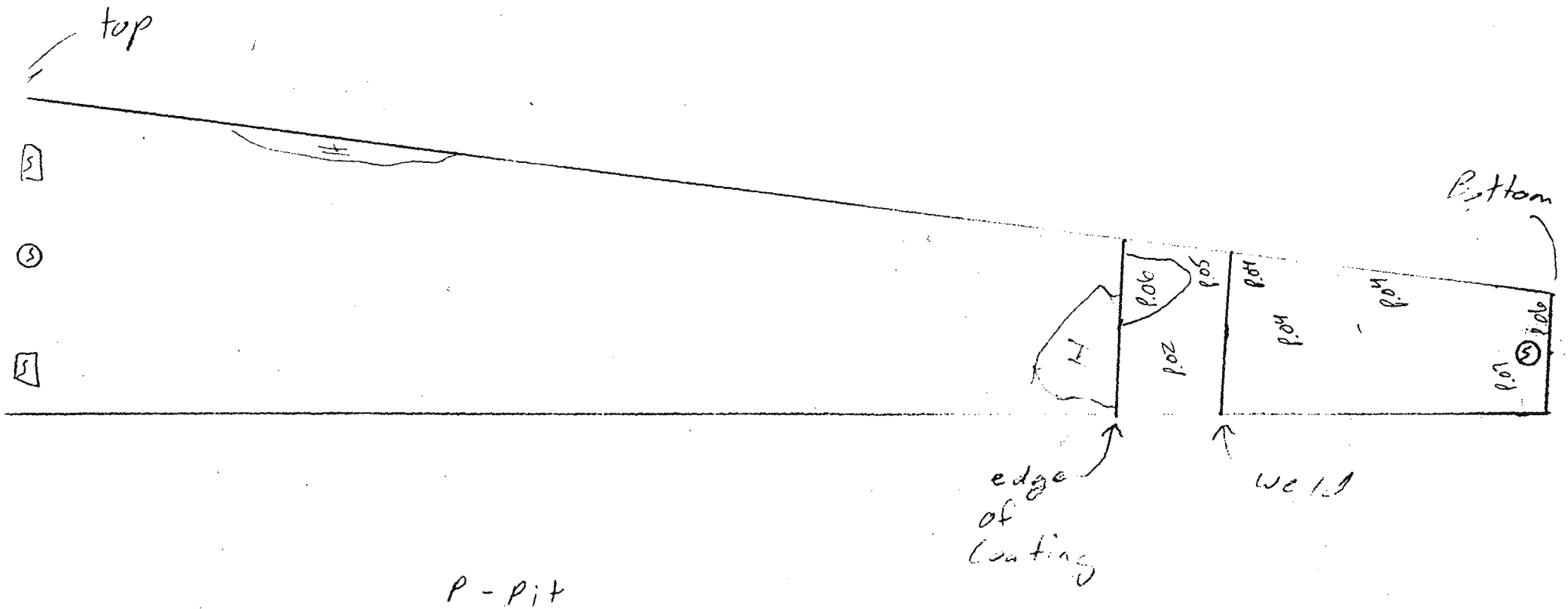
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 38
BY: L Woodman DATE: 7-3-95
REPORT NO:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

*M.M.P. Form No. OPF v. 2/92

No 5061

RDHLCC0001419
BWS028791



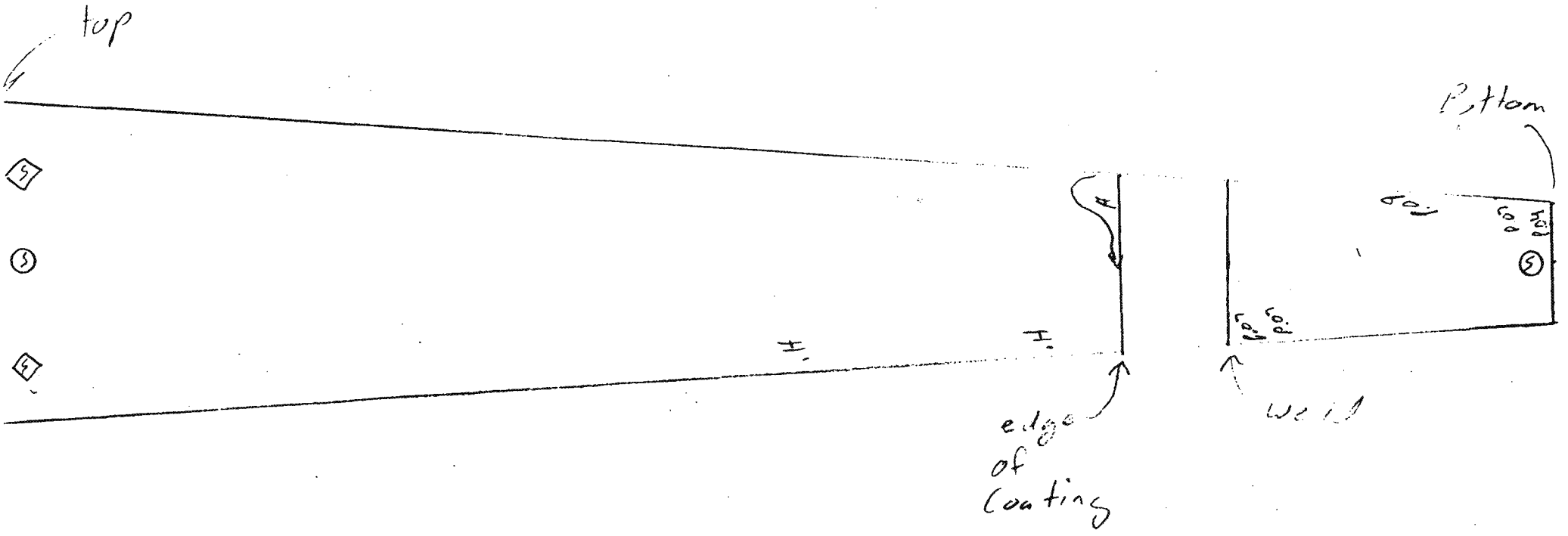
P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #39
BY: L. Woodmen
DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0F v. 2/92

No 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - coated pitting

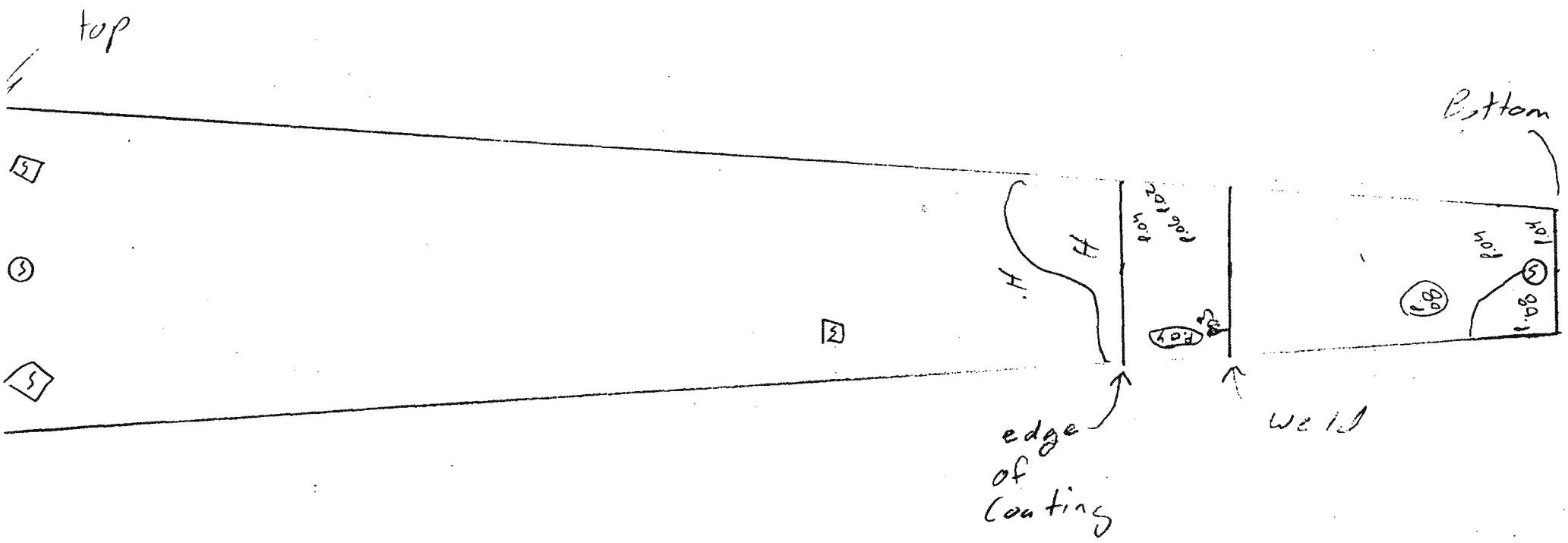
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #40
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0P v. 2/92

No 5061

RDHLCC0001421
B-235 BWS028793



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

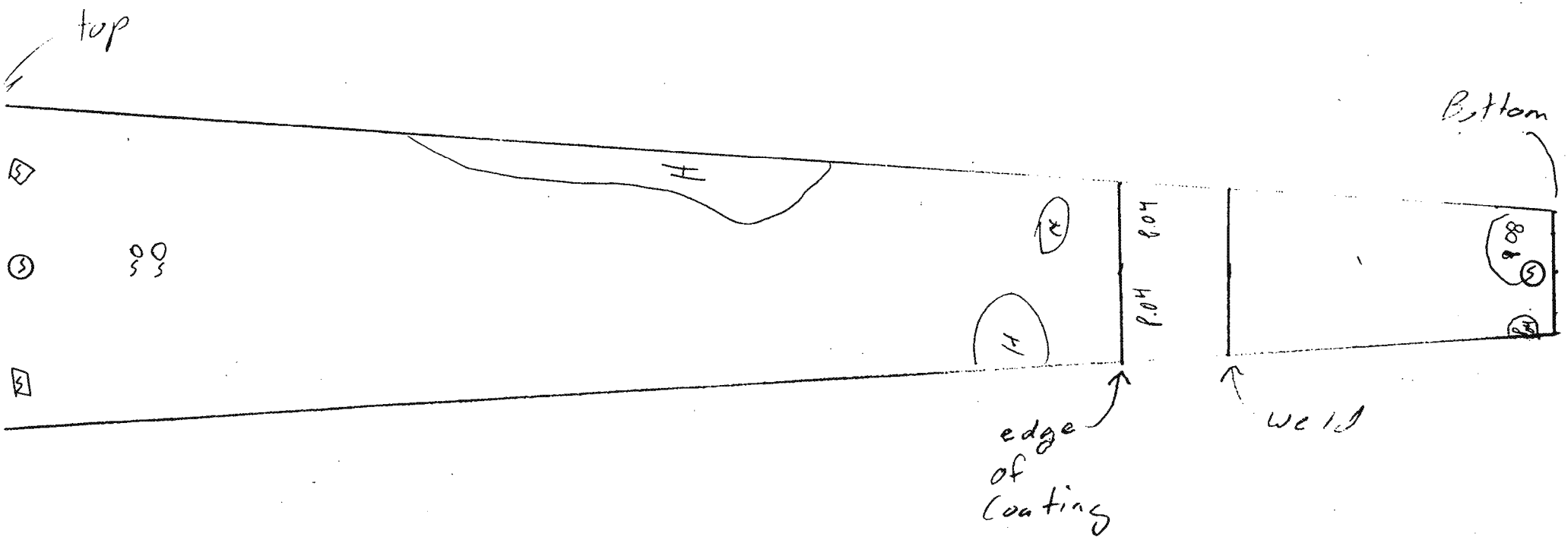
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate #41
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Amec Environmental
REMARKS:
SHEET OF

M.M.P. Form No. 0 rev. 2/92

№ 5061

RDHLCC0001422
BWS028794

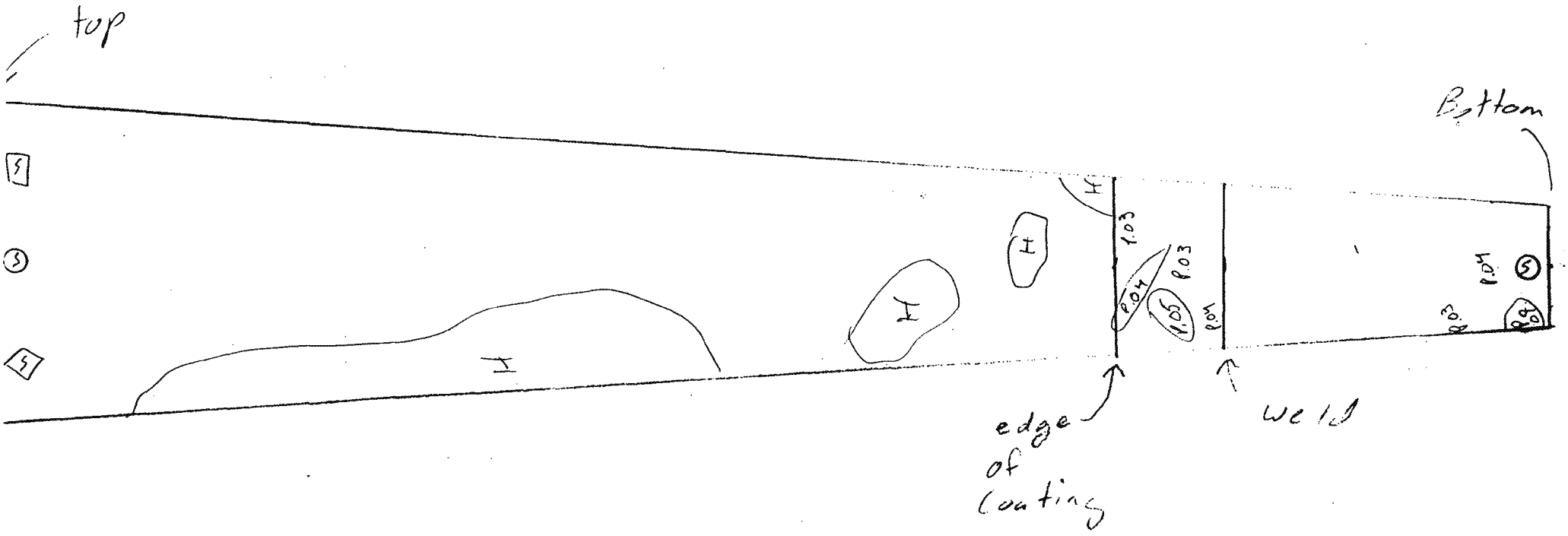


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310-597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #42	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Aman Environmental	
REMARKS:	
	SHEET OF

4 M.M.P. Form No. DP rv. 2/92

№ 5061

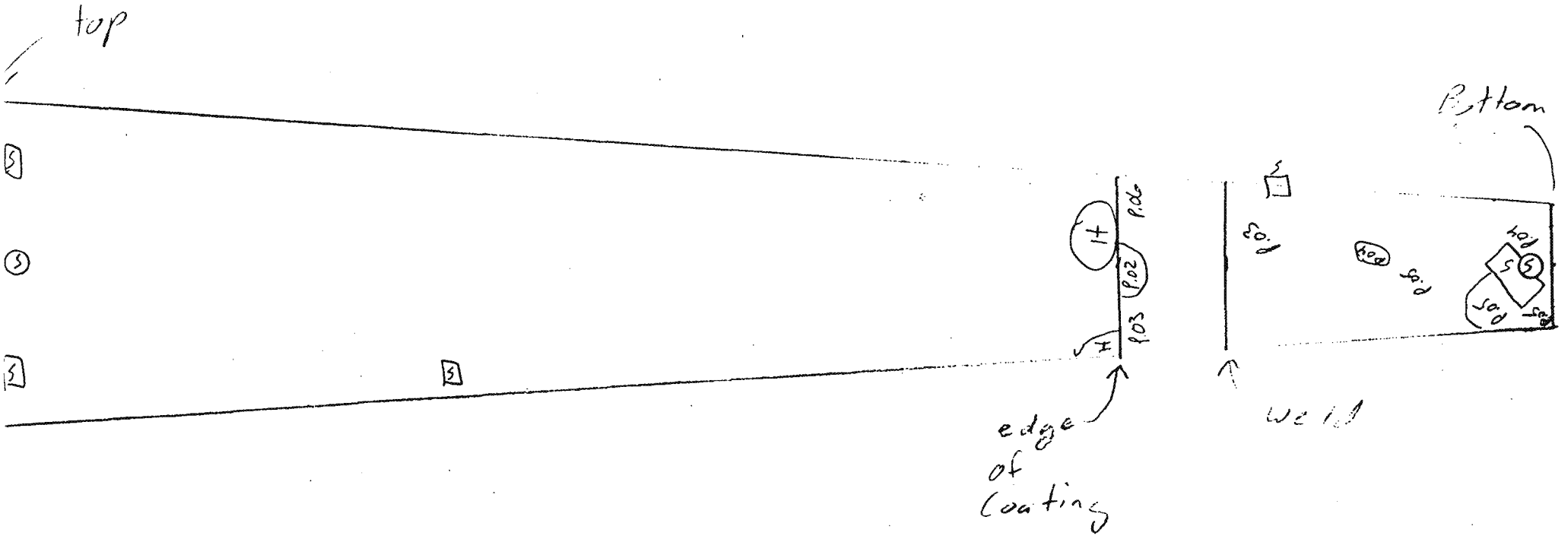


P - Pit
H - Holes in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc.	310/597-3932
PROJECT: Red Hill tank 13	
ITEM: Plate #43	
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT: Amec Environmental	
REMARKS:	
	SHEET OF

M.M.P. Form No. 01 v. 2/92

Nº 5061

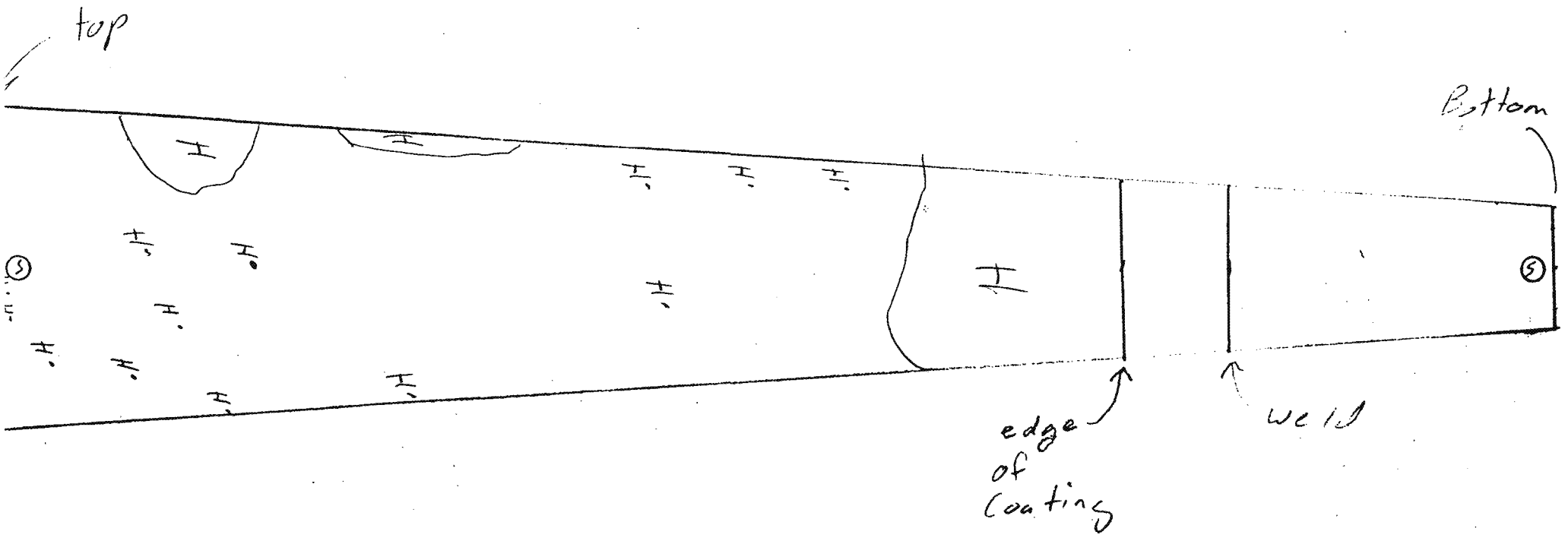


P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

M.M.P. Quality Inspections, Inc. 310/597-3932	
PROJECT:	Red Hill tank 13
ITEM:	Plate #44
BY: L Woodman	DATE: 7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
	SHEET OF

M.M.P. Form No. OP v. 2/92

No 5061



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

HOLIDAY TEST

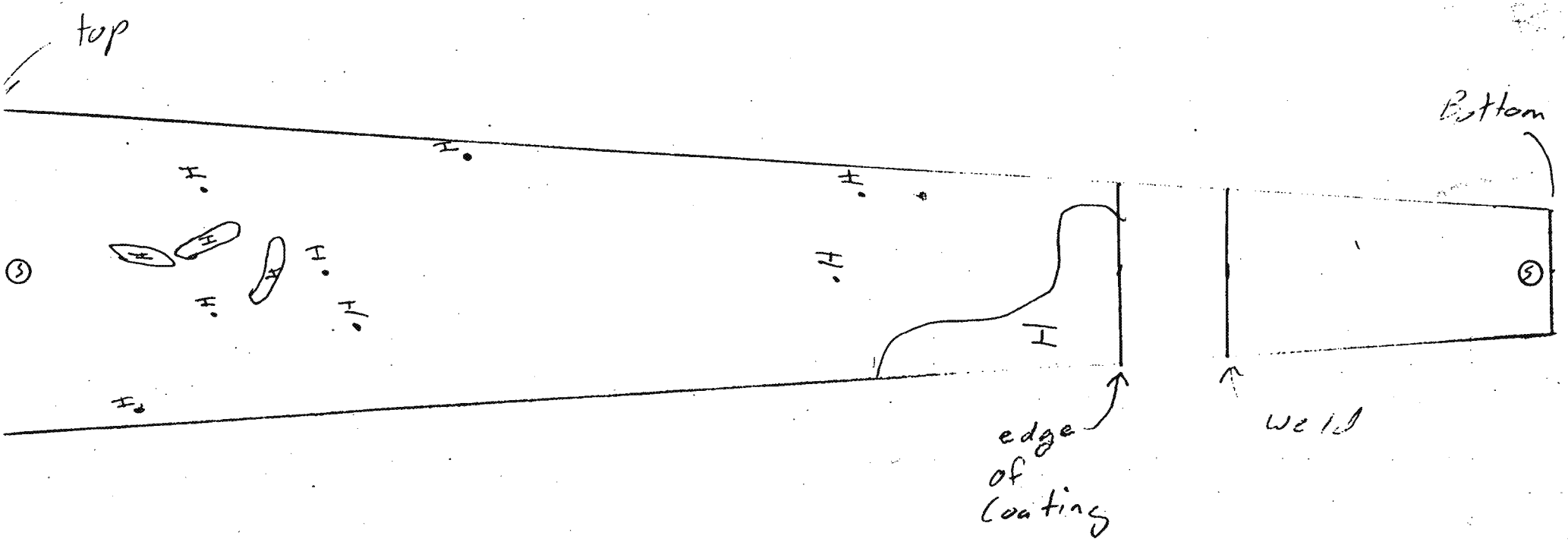
M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT:	Red Hill tank 13
ITEM:	Plate #23
BY:	L Woodman
DATE:	7-3-95
REPORT NO.:	
CLIENT:	Amec Environmental
REMARKS:	
SHEET	OF

M.M.P. Form No. 0P v. 2/92

No 5061

RDHLCC0001426
BWS028798



P - Pit
H - Hole in Coating
S - Surface patch
C - Coated pitting

Holiday Test

M.M.P. Quality Inspections, Inc.
310/597-3932

PROJECT: Red Hill tank 13
ITEM: Plate # 1
BY: L Woodman DATE: 7-3-95
REPORT NO.:
CLIENT: Aman Environmental
REMARKS:

SHEET OF

M.M.P. Form No. 0P\ /. 2/92

№ 5061

T A N K No. 1

GENERAL:

Excavation	Total Cu. Yds.	74010
Concrete	" " "	18005.75
Reinf. Steel	" Lbs.	940670
Struct. Steel	" "	131518
Steel Liner Plate	" "	885618
Cement (including grout)	" Bbls.	51060
Elevation - Upper Spring Line		308.86
Elevation - Lower Spring Line		168.96
Capacity	Bbls.	285742
Elevation - Bottom of Lower Dome		120.45
Elevation - Top of Upper Dome		358.53

RING TUNNELS:

Dimensions

Width	Ft.	15
Height	Ft.	13
Length	Ft.	321

Quantities

Excavation	Cu. Yds.	1701
Steel Ribs	Lbs.	0
Timber	M. FBM.	37.9

Chronology

Started Ring Tunnel	Date	3-3-41
Finished Ring Tunnel	Date	4-23-41

Tank No. 1

DOMES

QUANTITIES

Concrete	Cu. Yds.	4992.00
Cement	Bbls.	7862
Rf. Steel	Lbs.	282729
Excavation	Cu. Yds.	3649
Grout	Cu. Yds.	1221
No. Holes	No.	114
Length of Holes	Lin. Ft.	1389
Length of Pipe	Lin. Ft.	1000
Cement	Bbls.	8245
Steel Liner Plate	Lbs.	170163
Structural Steel	Lbs.	47718
Timber	M.FBM.	76.9
Steel Stairway	Lbs.	8277

CHRONOLOGY:

Started Excavation	Date	3-16-41
Finished "	Date	5-16-41
Started Struct. Steel Erection	Date	6-24-41
Finished " " "	Date	7-17-41
Started Steel Liner Plate	Date	7-18-41
Finished " " "	Date	9-5-41
Started Concrete	Date	9-26-41
Finished "	Date	9-29-41
Started Grouting	Date	10-3-41
Finished "	Date	10-15-41

Tank No. 1

SHAFT (4x6)

DIMENSIONS

Section		5x7 (Excav.)
Depth	Ft.	349.41

QUANTITIES

Excavation	Cu. Yds.	454.23
Timber	M.FBM.	18.9

CHRONOLOGY

Started Shaft	Date	12-15-40
Finished Shaft	Date	3-30-41

SHAFT ENLARGEMENT (12x12)

DIMENSIONS

Section		14.3 x 14.3
Depth	Ft.	260.41

QUANTITIES

Excavation	Cu. Yds.	1643.19
Timber	M.FBM.	38.5

CHRONOLOGY

Started Enlargement	Date	4-4-41
Finished "	Date	6-28-41

RING BLASTING

No. of Holes	No.	840
Length of Holes Ave 10' Total 8400	Lin. Ft.	8400
Vertical Distance Blasted	Ft.	207
Started Ring Blasting	Date	10-28-41
Finished " "	Date	11-2-41

Tank No.1

BARRELS & BOTTOMS

QUANTITIES

Concrete	Cu. Yds.	13013.75
Cement	Bbls.	21072
Reinf. Steel	Lbs.	557941
Excavation (incl. bal. of dome)	Cu. Yds.	66563
Grout	Cu. Yds.	1000
Cement	Bbls.	6748
Grout Pipe	Lin. Ft.	900
Teltale Pipe	Lin. Ft.	3500
Gunite	Cu. Yds.	3593
Cement	Bbls.	7133
Reinf. Steel	Lbs.	0
Wire Mesh	Sq. Ft.	0
Steel Liner Plate	Lbs.	715455
Structural Steel	Lbs.	11212
Steel Tower (Permanent)	Lbs.	64242
Steel Specials	Lbs.	69

CHRONOLOGY

Started Excavation	Date	11-3-41
Finished "	Date	3-19-42
Started Guniting	Date	11-25-41
Finished "	Date	2-28-42
Started Steel Tower	Date	3-23-42
Finished " "	Date	4-2-42
Started Concreting Bottom Dome	Date	4-5-42
Finished " " "	Date	5-29-42

Tank No. 1

CHRONOLOGY (Continued)

Started Concreting Side Walls	Date	6-9-42
Finished " " "	Date	7-19-42
Started Grouting Lower Dome	Date	8-10-42
Finished " " "	Date	8-17-42
Started Pre-stress Grouting	Date	8-17-42
Finished " "	Date	8-20-42
Started to Install Bottom Plate & Connections	"	8-24-42
Finished " " " " "		9-9-42
Started Water Testing	Date	9-9-42
Finished " "	Date	10-18-42
Started to Drain Tank & Clean Out	Date	10-18-42
Finished " " " "	Date	10-22-42
Started to Install Gauges and Steam Coils	Date	9-10-42
Finished " " " " "	Date	10-22-42
Turned Tank over to U.S. Navy for Operation	Date	10-26-42

10/5/

7019

CLEAN UNDERGROUND FUEL STORAGE TANKS

AT

REDHILL FUEL STORAGE FACILITY
PEARL HARBOR, HAWAII

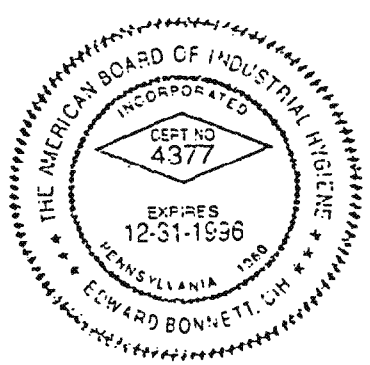
Contract No: N62755-93-D-2802

SITE SAFETY AND HEALTH PLAN (SSHP)

Section: J-C4
Paragraph: 2

Edward Bonnett
Certified Industrial Hygienist (C.I.H. #4377)
Registered Environmental Assessor (REA #699)

Edward Bonnett 6/10/94



AMAN ENVIRONMENTAL CONSTRUCTION, INC.
614 East Edna Place
Covina, California 91723
(818) 967-4287

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NOTICE

AECI EMERGENCY ACTIONS

To be issued to all site personnel and posted at all work areas and telephones.

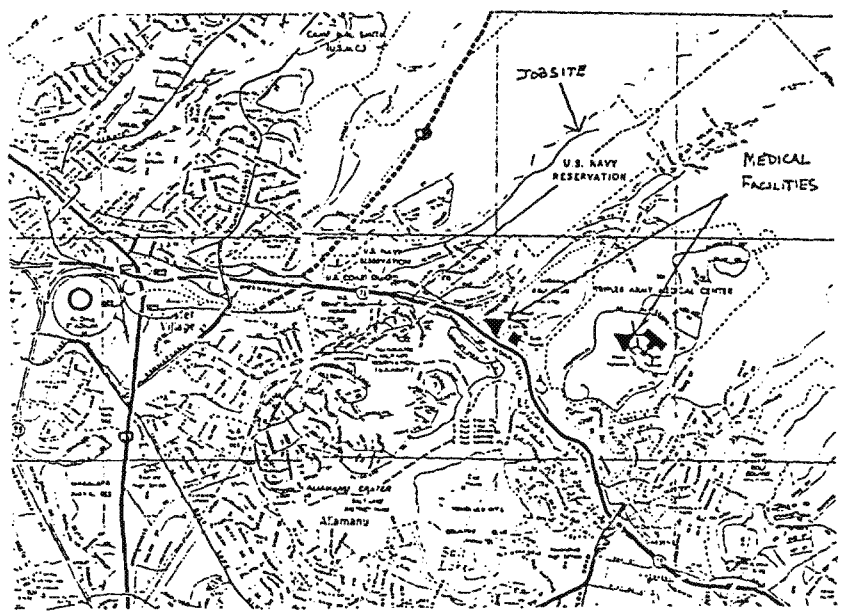
Minimization of personal injury and property damage relies on calm and quick response from personnel in the vicinity of the occurrence. The following general procedures apply to most major disasters and should be followed in the order indicated.

1. Notify others in the vicinity-remember, personnel may be wearing hearing protection and other safety gear that impairs hearing.
2. Identify the escape route.
3. Assess the situation-determine whether there is fire, loss of ventilation, explosion or risk of explosion, and whether there are injuries.
4. Summon emergency assistance-nearby personnel, supervisor, fire department, and government facility personnel.
5. Deal with the emergency.

List of emergency phone numbers:

Agency/Facility	Contact	Phone Number
Emergency (Off-base)	Response operator	911
On-site: Base Fire	Response operator	(808) 471-7117
Tripler AMC	Emergency Room Information	(808) 433-6620 (808) 433-6661
Moanalua Medical Center	Emergency Room Information	(808) 834-9709 (808) 834-5333
Security	Response operator	(808) 471-7114
Fuel Facilities Manager	Jim Gammon	(808) 471-2390
AECI Project Manager	Jeff Bygum	(818) 967-4287
Contract Officer	Janice King	(808) 474-3371
Contract Engineer	Wes Choy	(808) 471-0170

MAP TO NEAREST MEDICAL FACILITIES



Directions: Take access road south to Forward Ave. Turn left and head east to Ala Kapuna, turn right. Make an immediate left on Moanalua and head south, parallel to the freeway, to the medical center at 3288 Moanalua.

RDHLCC0001436

INTRODUCTION

It is the policy of **Aman Environmental Construction, Inc. (AECI)** that all on-site hazardous waste management activities be performed in conformance with a site-specific safety and health plan (SSHP). **AECI** believes the development of such a health and safety plan is necessary to ensure adequate protection for on-site personnel. The following SSHP follows the format and protocol established in the U.S. Army Corps of Engineers "Safety and Health Requirements Manual" EM 385-1-1 October 1992. This plan, at a minimum, meets the requirements under OSHA's Standard 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response), and 29 CFR 1926 (Construction Industry Standards) and the requirements specified in the contract document. This plan will be maintained and available on site, as will the Work Procedures Plan, and the corporate Safety and Health Plan.

This project involves cleaning the interior of nine underground fuel storage tanks at the Redhill fuel Storage Facility at Fleet and Industrial Supply Center, Pearl Harbor, Hawaii. The tanks have a capacity of 300,000 barrels, are 250 feet high and 100 feet in diameter and are a minimum of 100 feet underground. The tanks contain diesel fuel, or JP-5. Project activities will be conducted as specified in the work plan and this SSHP. The following table presents an Activity Hazard Analysis for the project. Toxicologic properties of all hazardous substances expected at the jobsite are presented in the MSDS contained in this SSHP.

ACTIVITY HAZARD ANALYSIS

ACTIVITY	POTENTIAL HAZARD	CONTROL MEASURES
Site Preparation/Mobilization	Unauthorized pedestrian traffic	Construct barriers around site, post appropriate warning signs, prohibit unauthorized entry into outside work areas and tunnels
	Physical injury from articles onsite, uneven terrain, or holes	Remove mobile, unnessary articles from site, grade, fill, or cover holes, etc. or barricade areas that can not be mitigated
	Physical injury from contact with heavy equipment or loading/unloding operations	Minimize personnel onsite, maintain orderly progression of activities, maintain constant communication between project personnnel, enforce proper lifting techniques, allow only trained personel
	Shock or elocrocution	Identify above ground utilities, determine safe perimeter distances and provide barricades or power down and lock out/tag out electrical utilities as appropriate, notify personnel of location and hazard of each
Work in Confined Space	Chemical hazards, oxygen deficiency, IDLH conditions	Identify and mark all confined spaces (tanks), monitor for IDLH conditions, enforce confined space entry permit system, identify work zones and restrict access No one will enter atmosphere of less than 19% Oxygen or greater than 22% Standby personnel will be trained and utilized for the emergency evacuation of incapacited personnel
Hoisting materials in tank and disassembly of valves in lower tunnel	Failure of hoist	All hoisting equipment will be tested prior to use on the project The supporting structure to which the hoist is attached will have a safe working load equal to that of the hoist Hoisting equipment will not be loaded beyond its rated capacity
	Failure of hoisting slings	Slings will be inspected prior to use for evidence of overloading and excessive wear or damage
Vertical movement of personnel inside tank	Scaffolding faliure	Only qualified employees will rig scaffolding Scaffolding will be supported by cables from anoverhead hoisting beam Scaffolds will be tested to twice their maximum load before use Scaffolds will be braced to prevent swaying Anchorages of suspended scaffolds will be inspected prior to each shift by the SSHO

ID/IQ Work	Ventilation failure/creation of explosive or asphyxiating atmosphere	Blowers will be inspected prior to each shift Atmosphere will be certified "gas free" by a marine Chemist Atmosphere will be monitored in accordance with the Air Monitoring Plan Operations will be conducted in accordance with the Confined Space Entry Permit System In the event of an impending hazardous atmosphere (<20% O2, >22% O2, or >10% LEL Diesel) work crews will be evacuated

JOB HAZARD ANALYSIS

JOB	HAZARD	MITIGATION
USE OF HAND TOOLS	Shock from electrical tools	Provide ground fault interruption for electrical circuits.
	Pinched or crushed fingers	Employees will be oriented in proper use of hand tools
	Injury to workmen from grinders	Workmen will be educated to keep the grinders clear of their body. Workmen will be advised on choice of proper grinding discs. Proper guards will be used at all times
	Injury from improper attachments	Employees will be oriented in the proper use of hand tools and their attachments. Tools will be inspected daily to assure that they are in good condition and guards are intact
	Hearing injury caused by tools that create excessive noise	Provide ear plugs for all employees
ELECTRICAL	Electrical shock from panel tie-ins	Ensure power to panels and/or breakers are deenergized before modifying panel for contractor use by a qualified electrician. All electrical sources locketd out/tagged out.
PETROLEUM STORAGE	Fire while fueling equipment	Provide fire extinguishers rated not less than 10B at the fuel storage area. Employees will be oriented in proper fueling methods. Equipment engines will be shut down prior to fueling.
	Fuel spillage	Provide dike around fuel storage tank. Provide approved safety gas cans with safety spouts
	Explosion	No smoking is to be permitted within 100 feet of fuel storage areas

HOISTING OPERATIONS	Malfunction of crane	Inspect crane daily prior to use to ascertain that hydraulic hoses are not defective and that all fittings, unions, etc., are secure
	Dropping load	Only competent and experienced men will be used to rig loads. Inspect rigging and equipment daily prior to use.
	Overloading crane	Prior to using a crane, the crane will be tested using 125 percent of the anticipated loads
	Breaking of load cable	Daily inspection of the condition of the load cable; replace if frayed or excessive wear appears
	Breaking of boom cable, if cable rig is used	Daily inspection of condition of boom cable. Replace if frayed or excessive wear appears
WELDING AND GAS CUTTING	Skin burns	Provide welding gloves and welding safety clothing for each welder
	Eye damage caused by welder's flash	Welders are to use appropriate welding hoods for all arc welding. Workers in the same areas are cautioned not to watch welders
	Leaking acetylene or oxygen hoses	Gas cylinders are to be turned off when not in use. Hoses are to be periodically inspected for wear and abrasion. Faulty hoses are to be replaced. Back-flow preventers will be installed on all oxygen-acetylene regulators.
	Tanks falling over	Tanks are to be stored in vertical upright position chained to bottle cart

SCAFFOLD WORK (Rigging, cleaning, tank repair)	Falling from scaffolding	Provide proper access to work and provide handrailing for scaffolding to be used. Planking used as scaffolds will be scaffold grade. All workers in tanks will wear safety harnesses and safety lines
	Physical hazards such as slipping, tripping, or injury from falling objects	Adequate scaffolding, platforms, and ladders will be provided for secure and safe accessibility of the entire work area. All obstacles which could be hazardous to personnel will be removed
MOVING AND OPERATING EQUIPMENT	Operation of equipment by inadequately trained and/or inexperienced operators	Use only designated operators who can prove that they are adequately trained and experienced to operate such equipment
	Malfunction of equipment	Daily inspection of equipment prior to use. All defects will be repaired before equipment is put back into service.
	Iinjury caused by moving equipment	Operators will not leave the equipment without first setting brakes and turning ignition off. When performing repairs to the equipment, remove the key from the ignition and "red tag" the equipment until the repairs are completed. Before moving any equipment, the operator will walk around the equipment, to ensure no one is underneath the equipment.

WORK IN CONFINED SPACES (Refer to Confined Space Entry Section of SSHP for full explanation of procedures)	Explosion and fire	Enclosed spaces will be tested to assure a non-explosive atmosphere Prior to entry tests will be performed using CGI Mechanical exhaust ventilation sufficient to maintain an uncontaminated and non-explosive atmosphere will be provided. Concentrations of vapors will be removed or diluted to a safe concentration (less than 3ppm benzene pe m^3). All electrical wiring, lights, and other equipment located in the confined space will be explosion-proof unless the atmosphere has been proven to be non-explosive. Portable air ducts will be of nonferrous materials. All motors and associated control equipment will be properly maintained and grounded. Fire extinguishers will be kept immediately available in the work area and will be maintained in a state of readiness for instant use. No matches, lighted cigarettes, cigars, or pipes, and no cigarette lighters will be taken into the area where work is being done. Conspicuous "**No Smoking**" signs will be posted.
	Oxygen deficiency and/or the presence of toxic liquids, vapors, or dusts	No one will be allowed to enter an area that contains an oxygen deficiency, fuel contamination or any other condition which may be immediately harmful to life.

1.0 EMPLOYEE EDUCATION

The Safety Supervisor will instruct all new employees on the hazards inherent in the work on this project and on the safety precautions to be taken.

Before starting each particular phase of work, the Safety Supervisor will point out the hazards involved in that particular work and instruct all workers in the precautions to be taken.

a. **A copy of our safety policy will be posted on the jobsite bulletin board as a reminder to employees to be Safety conscious while at work.**

b. **The Safety Supervisor will conduct weekly safety meetings at the beginning of each shift on Mondays and at other times as appropriate to changing work tasks or site conditionsto emphasize the importance of safety, to review hazards involved on this project and to remind workers of the precautions to be taken, to address any questions the workers may have regarding safety, and to deal with any other matters that may arise.**

2.0 TRAINING

2.1 Training Requirements

AECI requires that all personnel working on-site in the exclusion and contamination reduction zones be initially trained at an OSHA approved 40-hour health and safety training course that meets the requirements of 29 CFR 1910.120. Normally, these are five-day (forty-hour) courses which include field demonstrations. The key points of the training program include care, use, maintenance, and limitations of respiratory protective equipment; risk assessment; site security; toxicology; chemical reactivity; use of monitoring equipment; work procedures; site safety procedures; emergency response procedures; levels of protection, protective clothing, and decontamination; and practical field exercises conducted for personal protection levels A, B, and C. All employees working on-site with the potential for exposure to hazardous substances, health hazards, or safety hazards will meet the minimum training requirements as specified in 29 CFR 1910.120. All supervisory personnel have received an additional eight hours of supervisor training as required for management of personnel and activities associated with hazardous waste site activities. In addition, supervisory personnel must be currently certified in CPR/First Aid.

In addition to the initial forty-hour training program, **AECI** requires field personnel to attend an annual refresher training program. The purpose of this 8-hour refresher training is to ensure that personnel retain the basic knowledge necessary to be adequately protected, and demonstrate proper site health and safety procedures. Supervisors are also required to take an additional 8-hours of refresher training annually. Evidence of this training will be presented to the SSHO prior to work, and will consist of certifications from competent training facilities.

Right-to-Know training will follow the standards of the **AECI** program, based on 29 CFR

1910.1200 / Employee Right-to-Know.

Confined Space

All personnel who must enter a confined space will be trained in accordance with 29 CFR 1910.146 Section E "Training and duties of authorized entrants", standby observers will be trained in accordance with Section F "Training and duties of the attendant" and the Site Manager, Site Safety and Health Officer (SSHO) and other appropriate personnel will be trained in accordance with Section G "Training and duties of the individual authorizing or in charge of entry".

2.2 Training Requirements

The following training requirements will be enforced on site.

Training	Exclusion Zone	CRZ	Support Zone
Hazwoper	40-hr	40-hr	24-hr
8-hour HAZWOPER update	X	X	X[a]
Confined Space	X	X	Not required
3-day on-site training	X	X	Not required
Supervisory 8-hr training	8-hr	8-hr	8-hr
Right-to-know	X	X	X

a Not required for visitors/contractors.

2.3 Pre-Entry Requirements

During the initial site set-up, the SSHO will make a reconnaissance of the on-site work areas. After this, the SSHO will call a meeting with **AECI** on-site personnel and the subcontractor's personnel. Site-specific safety procedures will be covered by the SSHO. Prior to each new task, the safety procedures will be reviewed by the SSHO with the personnel involved. The SSHO will be available to address unforeseen circumstances and to implement appropriate changes to the safety plan.

Subcontractors working on the project and involved in site activities are required to comply with all applicable health and safety regulations for hazardous waste site operations. All personnel, working on-site, will be required to signify that they have read and understand the contents of the health and safety plan.

2.4 Site Specific Training

. Initial

An initial site-specific training session will be conducted by the SSHO prior to commencement of work or entering the site. All site employees, including those working in the support zone, will attend this training. The training will cover, at a minimum, the following:

1) Names of personnel and alternates responsible for site safety and health and

emergency response for hazardous waste operations.

2) Safety, health and other hazards present on the site.
3) Use of personal protective equipment, safety harnesses, belts, and lines.
4) Safe use of engineering controls and equipment on the site.
5) Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.

Specific Field Training

Specific field training for each task will be undertaken by management. In addition, periodic on-site training will be provided by **AECI** at least weekly and prior to each change in operation. Records of all training will be placed in each employees employment jacket on site. Training of new employees will be conducted prior to allowing them to work in the work zones.

3.0 PERSONNEL PROTECTION PROGRAM

Personal Protective Equipment

PPE for work area/task:

LEVEL D	LEVEL D MOD.	LEVEL C	LEVEL B
Work areas outside the tank	Tank cleaning operations	Tank cleaning operations if atmosphere tests >Benzene PEL 3 mg/m^3	Emergency evacuation of personnel in a hazardous atmosphere (<20% O_2, >10% LEL-.6% v/v)

3.1 Levels of Protection

The levels of protection used in the work zone are based on site specific information and are adapted from OSHA recommendations. Generally, the routine accepted protection will be modified for specific tasks. Level D will be implemented for personal protective clothing and equipment for personnel performing work outside of the tanks, with the option to upgrade the level of protection, if on-site atmospheric monitoring indicates the need for respiratory protection or additional skin protection.

Level D

Level D personal protective clothing and equipment includes:

Distinct Work Clothing

- Hard Hat
- Safety Glasses or Goggles
- Protective Outer Gloves (When Handling Soiled Equipment)
- Hearing Protection (As Required)
- Safety Shoes (Steel Toe)

Modified Level D

Modified Level D personal protection clothing and equipment include:

Distinct Work Clothing

- Hard Hat (for Splash Protection: Equip with Face Shield)
- Safety Glasses or Goggles
- Chemical Resistant Boots or Work Boots (depending on splash hazard), with Steel Toe and Shank
- Disposable Outer Boot Covers (as required)
- Chemical Resistant Outer Gloves
- Disposable Tyvek or Saranex Coated Coveralls

- Hearing Protection (as required)

Level C

Level C personal protection includes the above Modified Level D clothing and equipment but includes a full-face air-purifying respirator(MSA "Ultra Twin") fitted with organic vapor/HEPA cartridges.

If level C PPE is required, the yellow/magenta cartridge for organic vapor/particulates is the appropriate cartridge for use with the known hazardous materials and corresponding concentrations. Cartridge change over frequency will be determined by the on-site IH/SO, and will be based on contaminant concentrations and exposure duration. Criteria for using this type of respiratory protection will be determined by the IH/SO, in compliance with the Respiratory Protection Program.

Level B

Level B personal protection consists of:

- pressure-demand, full facepiece SCBA or supplied air with escape SCBA
- chemical resistant hooded overgarment (Tyvek/Saranex)
- inner and outer chemical resistant gloves
- chemical resistant safety boots
- hard hat

Tank Work

Personnel working inside the tanks must also have the following additional safety equipment:

Safety Harness
Lifeline (at least .5 inch diameter with tensile strength of 6,400 pounds)

3.2 Change of PPE Level

Specific levels of protection will be incorporated whenever new site conditions develop. Such conditions may require the next higher level of protection. The decision to change levels of protection will be made by the SSHO and SM with approval from the PM and the IH/SO. If an immediate decision is required, the SM and SSHO can upgrade protection levels without approval from the IH/SO and PM. They must then obtain approval after the fact from the IH/SO and PM. Levels of protection will not be downgraded without prior approval from the IH/SO and PM.

3.3 Using PPE

All persons entering the tank will use the required personal protective equipment according to established procedures in this plan to minimize exposure potential. When leaving the tank, personal protective equipment shall be removed according to these established procedures to minimize the spread of contamination.

- Remove coveralls then gloves. All disposable clothing should be placed in plastic bags and labeled as contaminated waste.
- Remove respirator (if required)
- Wash hands and face thoroughly with soap and water.
- Clean and disinfect respirator for next use. (if required)
- Proceed to the exit point and sign out.

All disposable equipment, garments, and personal equipment shall be bagged in two 6 mil plastic bags, placed in 55 gallon drums, labeled, and disposed of at an approved facility.

3.4 Respiratory Protection Program

Employees and subcontracted personnel will likely be required to perform tasks in a respiratory hazardous environment. AECI and its subcontractors will provide their respective employees approved respiratory protective equipment.

Employer Responsibility

- Provide appropriate respirators, filters, cartridges, and replacement parts.
- Provide breathing air of appropriate quality.
- Implement respirator training program.
- Conduct regular inspections to ensure compliance.

Employee Responsibility

- Use respirators in accordance instructions and training.
- Properly clean, disinfect, and store their respirator.
- Report equipment deficiencies to the SSHO.

Medical Evaluation

- Employee must be certified "fit" by a physician to use respirator prior to use.
- Medical status will be reviewed annually.
- Medical reports will be kept on file by the physician.

Proper Respirator Fit

Respirators must have a tight seal with the wearer's face in order to function properly. Wearers must ensure the following conditions:

Fit tested
Clean shaven
All straps in place and secured
No sweatbands
Positive and negative pressure check with negative pressure respirators
Powered air purifying respirators checked routinely for proper air flow
No contact lenses

Respirator Maintenance

Disassemble
Wash all parts in mild detergent solution
Rinse with warm water
Disinfect in solution per manufacturer's instructions
Rinse in warm water
Air dry in clean area
Replace filter cartridge
Place in plastic bag, labeled with date of cleaning and cleaner's initials
Store in a place free from dust, sunlight, extreme heat or cold, excessive moisture or damaging chemicals
Site Safety Officer will inspect once per month

Limitations and Restrictions

Certain contaminants are absorbed through the skin (i.e., lead).

No one will wear a respirator without being properly fitted.

No one will enter a hazardous atmosphere without appropriate respiratory protection.

No one will enter a confined space without consulting the SSHO, who will detail correct procedures (per 29 CFR 1910.146 and SSHP).

Air Purifying Respirators (APRs) and Powered Air Purifying Respirators (PAPRs) offer no protection against oxygen deficient atmospheres.

APRs and PAPRs protect against limited concentrations of contaminants.

APRs offer resistance to inhalation which may cause discomfort.

Useful life of a mechanical filter is limited by the amount of particulates that can be absorbed before inhalation becomes significantly difficult.

The useful life of a chemical cartridge filter is limited by the concentration of the contaminant, breathing rate and volume of the wearer, and the capacity of the air-purifying medium.

Chemical cartridge respirators are not for use against substances with poor warning characteristics, substances which generate heat on reaction with the absorbent, or substances that are extremely toxic in small concentrations.

APR and PAPR half masks are not to be used in atmospheres highly irritating to the eyes.

APRs and PAPRs are not be used in atmospheres immediately dangerous to life or health.

Training

All employees must be properly trained in the selection, fit, wear, and limitations of respiratory protective equipment. Safety meeting must include a review of the specific equipment to be used, how to cope with emergency situations, and PPE maintenance.

3.5 PPE for Government Personnel

AECI will provide appropriate approved personal safety equipment and protective clothing to government representatives who require access to the exclusion zone except respirators and personal steel toed boots. A minimum of two sets of appropriate PPE per day will be provided to support government representatives.

3.6 Duties and Responsibilities

Project Superintendent

1. Responsible for overall safety and safety related matters, day to day administration is the responsibility of the Site Safety Officer (SSHO).

2. Conduct a preparatory inspection with the SSHO, Foreman, and/or subcontractor personnel before any phase of work is undertaken.

3. Ensure all operations are planned and conducted in a manner that limits the probability of accidents.

4. Orient all employees to the hazardous conditions, rules, policies, procedures, and enforcement provisions of the safety program. Daily safety meetings will be held for employees and weekly for supervisors.

5. Ensure all tools, materials, and protective equipment are available and in serviceable condition. Ensure all personnel are physically fit prior to each work shift.

6. Inspect work practices and procedures and initiate appropriate corrective actions for non-compliance.

7. Initiate investigations of all accidents and take corrective action to mitigate their causes.

8. Ensure any injured personnel receive prompt and appropriate medical attention.

Employees and Subcontractor Personnel

1. Comply with provisions of this program.

2. Report all unsafe practices and hazardous conditions.

3. Perform work in a safe manner in appropriately designated PPE.

4. Do not attempt to perform duties or operate equipment without adequate instruction and training.

5. Report any physical impairments or restrictions to their supervisors and the project superintendent. This includes any medical condition, temporary or permanent, and any limitations to physical activity.

4.0 MEDICAL SURVEILLANCE REQUIREMENTS

An essential requirement of the SSHP is to provide that project personnel who may be exposed to materials having potentially adverse and deleterious health effects, be medically certified and adequately trained prior to beginning work at the site. **AECI**'s corporate medical surveillance programs have been implemented to establish a medical baseline and monitor for any symptoms of over-exposure for individuals who participate in remedial investigations, feasibility studies, and construction phase services at hazardous waste management sites. Additionally, the program is intended to determine the individual's capability for performing on-site-work, including the use of respiratory protective equipment.

Each individual receives a physical examination by a physician who is licensed and board certified or board eligible in occupational medicine by the American Board of Preventative Medicine. Standard parameters such as height, weight, vision, temperature, and blood pressure are noted. The complete physical examination is complemented by occupational and medical histories. Other information obtained with the medical examination includes: chest x-rays, electrocardiogram, pulmonary function test, urinalysis, and blood tests. Attachment A describes the medical surveillance requirements for the **AECI** employees working on this site. **AECI** employs the medical services of Peter P. Greaney, M.D. and his staff at the Greaney Medical Group at 1105 S. Anaheim Blvd. Anaheim, California 92805. Dr. Greaney is certified in occupational medicine and toxicology, and has been notified of exposure conditions at the project site.

5.0 MONITORING AND SAMPLING

5.1 Air Monitoring Plan

In compliance with OSHA 29 CFR 1910.120, **AECI** will implement an air monitoring plan to detect and quantify contamination associated with each specific work task.

Work Task	Monitoring Equipment	Monitoring Location
Install ventilation system	O2 Meter/CGI PID	Upper & lower tunnel
Inspect support structure	O2 Meter/CGI PID	Tank entrance
Install spider booms	O2 Meter/CGI PID	Tank entrance, support structure
Wash tanks	O2 Meter/CGI PID	Tank entrance, support structure
Tank inspection/IDIQ work	O2 Meter/CGI PID	Tank entrance, support structure, base of tank

5.1.1 Monitoring Equipment

All air quality monitoring and sampling equipment will be provided by **AECI** or its subcontractor(s).

EQUIPMENT	CGI/O_2 Meter	PID	Detector Tube (Benzene)
ANTICIPATED USE	Monitor atmosphere inside tank	Monitor atmosphere inside tank	Minotor breathing zone of workers cleaning tanks
CAPABILITIES	Measure levels of combustible gas and the percentage of oxygen in the atmosphere	Measure approximate concentration of organic vapors	Detect concentrations of benzene

If there is a change in site conditions, new equipment will be procured and manufacturers

specifications will be provided to the CO. These products will be routinely available equipment used throughout the environmental industry.

5.1.2 Calibration

AECI will maintain and calibrate the instruments according to NIOSH analytical methods and/or manufacturers' recommendations. Instruments will be calibrated daily. Maintenance and calibration data shall be recorded and included in the project record documents. All monitoring results shall be recorded on a daily field log and retained for the project files.

EQUIPMENT	CGI/O_2 Meter	PID
CALIBRATION All instruments will be calibrated before use in accordance with the manufacturer's instructions	The oxygen meter will be calibrated to 21% in ambient air The CGI will be calibrated with hexane gas in accordance with the manufacturer's instructions	The PID will be calibrated with hexane gas in accordance with the manufacturer's instructions

5.1.3 Monitoring Frequency

Ambient Air Monitoring for Voloatile Organic Compounds

Monitoring will be conducted at the beginning of and throughout each intrusive activity. Personal monitoring equipment will include real-time atmospheric monitoring. The PID air monitoring equipment will be used and maintained to monitor for the possible presence of volatile organics. Ambient air monitoring for organic vapors will be performed continuously, and with every change in task or work location. Monitoring will be conducted in the breathing zone of the most exposed worker. Records of monitoring results will be kept in afield monitoring log.

Oxygen Monitoring

Oxygen levels will always be determined first. Combustible Gas levels and oxygen levels will be monitored continuously during intrusive activities and a record will be kept in a field monitoring log.

Combustible Gas

If combustible gas levels are below ten (10) percent of the Lower Explosive Limit (LEL), work will proceed.

- If combustible gas levels are detected at 10 percent of LEL or greater, the potential for development of an explosion hazard exists.

- Work shall be halted if combustible gas levels reach greater than 10% LEL until such

time as levels fall below 10 percent LEL.

5.1.4 Action Levels

Organic Vapor Readings

Levels of personal protection equipment (PPE) selected and other actions to be taken to protect workers will be based on data obtained using the instruments described above.

Routine work will be conducted in Level D or Modified Level D PPE, as appropriate for the task.

CONSTITUENT	LEVEL D/ LEVEL D MODIFIED	LEVEL C	EVACUATE TANK
Benzene	0-0.5ppm	0.5-5ppm	>5ppm
Oxygen	20%-22%	20%-22%	>22% or <20%
Lower Explosive Limit	<10% LEL	NA	>10% LEL

5.2 Noise Hazard and Monitoring Plan

To ensure safety from noise hazards, personnel in the work zone will wear foam ear plugs (dBa attenuation 5-10) during the operation of heavy equipment or generators in the work area. If this is insufficient, ear muffs will be worn in addition.

5.3 Heat Stress Monitoring

The temperature in the tunnels and tanks at Redhill is a consistent 65 degrees F. Heat stress is likely if ambient temperature rises above 70 degrees F. Workers on site will be monitored for heat stress when temperatures exceed 70 degrees F at the end of each work cycle by checking their radial pulse and oral temperature. If the radial pulse exceeds 110 beats per minute or oral temperature exceeds 99.6 degrees F, the next work cycle will be cut by one-third. No one whose temperature is 101.6 or greater will continue to work. The SSHO will record pulse rates and oral temperatures in his field log.

6.0 SITE CONTROL AND WORK ZONES

6.1 General Requirements

All employees arriving for work on a daily basis will sign a log book noting arrival and departure. The book will be signed each time an arrival or departure is made to or from the work area and will be issued an access badge. A separate log will be maintained for visitors who do not enter the exclusion zone of the site.

The Site Manager will arrange for posting of adequate barricades and barrier tape systems to delineate the work exclusion, contamination reduction, and support zones on a daily basis.

6.2 Control Zones

The Site Manager will establish control zones for the project based upon the location of activities, accessibility, and site control. These zones will be clearly marked and protected against unauthorized entry.

Support Zone

The Support Zone will be established in the contractor's staging area (outside adit 3l and will be used for the storage of supplies and general administrative functions, including sanitation facilities. Eating and drinking will be permitted in the support zone area only after workers have washed their face and hands, and only in areas clearly designated by the SSHO. This area is outside and free of any hazardous atmosphere.

Contamination Reduction Zones

A Contamination Reduction Zone (CRZ) will be established at or near the tank entrances for personnel during tank cleaning operations. All personnel entering or leaving the Exclusion Zone will pass through this area for the purpose of accountability, wear of proper PPE, authorized access, and any required decontamination.

Exclusion Zone

For the purpose of this project, the Exclusion Zone (EZ) will be the interior of the tank and any adjacent are in the tunnel where a hazardous atmosphere exists, if any, based on air monitoring. This zone has the highest potential for accidental injury and exposure to contaminants by contact or inhalation. All employees will use proper personnel protective equipment when working in these areas. The exclusion zone will be a defined area where there is a possible respiratory and/or contact health hazard.

6.3 Buddy System

No employee will ever work in a situation where he/she is the sole person in an area which does not allow for ready observations by another worker who serves as the "buddy".

6.4 Standard Operating Safety Procedures

6.4.1 Site Rules/Prohibitions

Eating, drinking, chewing gum or tobacco, and smoking are prohibited in the exclusion zone at any time. Eating and drinking will be permitted only in the support zone and NO SMOKING will be permitted at the Redhill Facility, inside or outside.. **AECI** will designate a resting area with drinking water and disposable cups. Waste will be disposed on a daily basis.

6.4.2 Heavy Equipment Operation

All heavy construction equipment will be operated under the protocols in accordance with 29 CFR 1926.

6.4.3 Site Housekeeping

Containers will be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. will be equipped with covers. Garbage and other waste will be disposed of at frequent and regular intervals.

6.5 Logs and Reports

6.5.1 Employee\Visitor Register

The following information will be included in the employee/visitor register:

1) Date
2) Name
3) Agency or company
4) Time entering site
5) Time exiting site

6.5.2 Monitoring\Sampling Results

1) Date
2) Type of equipment utilized
3) Equipment I.D. number
4) Monitoring results for each work location or monitoring station with time of readings
5) Analytical results for personal exposure sampling
6) Personnel or location monitored/sampled with description of activity being performed
7) Sample numbers

8) Miscellaneous information related to monitoring/sampling performed
9) Instrument calibration data

6.5.3 Accident Reporting

All accidents, which occur incidental to an operation, project will be investigated, reported and analyzed.

AECI will be responsible for recording and reporting all accident exposure and experience incident to the work. As a minimum these records will include exposure work-hours and a log of occupational injuries and illnesses. All injuries and diagnosed occupational illnesses will be reported to the Contracting Officer.

AECI will keep a record of employee exposure to toxic materials and harmful physical agents. Also, **AECI** will notify the Government and the employee of any excessive exposure and the hazard control measures that will be taken.

An accident with any of the consequences listed below will be immediately reported to the Government. These accidents will be investigated in-depth to identify all causes and to recommend hazard control measures. Except for rescue and emergency measures, the accident scene will not be disturbed until it has been released by the investigating official. The consequences requiring an in depth investigation are:

1. Fatal injury
2. Five or more persons admitted to a hospital
3. Property damage in an amount specified by the Government
   Normally investigative officials, having expertise in areas related to the incident, will be selected from operating elements other than the element involved.

A daily record of all first aid treatments not otherwise reportable will be maintained and furnished to the Government upon request.

AECI is responsible for reporting all injuries within 24 hours.

6.6 Employer Obligation

AECI is aware the Federal laws such as OSHA (29 CFR) require that chemical exposure records and/or medical records be maintained by the employer for a specified length of time after the termination of an employee. **AECI** will be responsible for recording and reporting all accidents including those of our subcontractors. As a minimum, the records will include the following:

- Exposure work hours and a log of occupational injuries and illnesses (OSHA Form 200 or equivalent).
- All diagnosed occupational illnesses and injuries that result in a lost work day will be investigated and reported to the Contracting Officer.
- All accidents will be reported within 24 hours of their occurrence.
- Any lost time accident will be investigated in depth to identify all causes and to

recommend hazard control measures.

- Except for rescue and emergency measures, the accident scene will not be disturbed until it has been released by the investigating official.
- A daily record of all First Aid treatments not otherwise reportable will be maintained on prescribed forms and furnished to the designated authority upon request.
- Injured persons will be responsible for reporting all injuries as soon as possible to the SM.
- The PM will accept all reports of injury from a subordinate.

6.7 Site-Specific Safety Hazards

Site-specific health and safety training will be provided for all site personnel. The SSHO will conduct a tailgate safety meeting with all contractor and subcontractor personnel at the beginning of each workday. Each tailgate safety meeting will include a discussion of one or more of the following items:

1. Hazard Analysis: chemical, physical
2. Recognition of hazardous materials
3. Use of Material Safety Data Sheets
4. Use of safety equipment
5. Use of personal protective equipment, including their care and proper fitting
6. Use of the respiratory protective equipment/confirmation of fit-testing of each individual
7. Relevant first aid procedures
8. Internal and external communications
9. Use of the "Buddy System" at the site
10. Environmental area and personal monitoring
11. Areas of restricted access
12. Standard safety operating procedures
13. Procedures for handling hazardous materials
14. Procedures for taking samples
15. Decontamination procedures
16. Emergency procedures and plans
17. Accident prevention

7.0 DECONTAMINATION PROCEDURES

7.1 Site Personnel Decontamination

As specified by the specification, no exposure to hazardous material are expected. However, if contamination is discovered in the work zone, personnel leaving the area will be thoroughly decontaminated. This includes:

1. Boots and overalls
2. Field washing
3. Respirator cleaning

The following decontamination equipment is required:

Two small tubs (wash and rinse water), scrub brush, contaminated clothing disposal bag, respirator cleaning solution. Non-phosphate detergent and water will be used as the decontamination solution. The decontamination liquids and clothes will be disposed of on a regular basis as hazardous waste.

Doffing procedures will include the following:

1) Upon entering the contamination reduction zone, remove gross debris from Tyvek coveralls.
2) Rinse contaminated mud/sludge and debris from boots or remove boot covers.
3) Assistant loosens and removes the steel-toe and shank boots.
4) Remove outer gloves.
5) Remove coveralls then inner gloves. All disposable clothing should be placed in plastic bags and labeled as contaminated waste.
7) Remove respirator face piece.
8) Clean respirator and other reusable protective equipment, such as hard hat and boots.
9) Wash hands and face thoroughly with soap and water.
10) Clean and disinfect respirator for next use.
11) Proceed to the exit point and sign out.

7.2 Emergency Decontamination

Emergency decontamination will be modified to suit the specifications of the incident. If the greatest risk of injury to personnel is physical and not chemical, careful removal of respirators may not be necessary. The orderly sequence of clothing removal may be adapted to facilitate quick exit of personnel. In the event of a medical emergency, a decision will be made concerning the priority of decontaminating the victim relative to the potential for life threatening injuries. If the victim is contaminated, the outer clothing can be cutoff and removed and/or the person can be wrapped in plastic or a blanket. In the event of an extreme emergency, decontamination may be omitted as long as the medical responders are made fully aware of the fact, and apprised of the dangers to be avoided.

appropriate authorities notified, and follow-up reports completed. The SSHO will contact the Contracting Officer if a hazard exists at the site that may impact public safety.

8.3 Emergency Response/Contingency Plan

Minimization of personal injury and property damage relies on calm and quick response from personnel in the vicinity of the occurrence. The following general procedures apply to most major disasters and should be followed in the order indicated.

1. Notify others in the vicinity-remember, personnel may be wearing hearing protection and other safety gear that impairs hearing.

2. Identify the escape route.

3. Assess the situation-determine whether there is fire, loss of ventilation, explosion or risk of explosion, and whether there are injuries.

4. Summon emergency assistance-nearby personnel, supervisor, fire department, and government facility personnel.

5. Deal with the emergency:

Fire-extinguish or contain, remember that fires consume oxygen rapidly. Try to reduce the air or fuel to the fire.

Scaffold or rigging failure-Attempt to tie off any loose or non-secured sections to prevent additional hazards.

Personal injuries-render first aid and seek medical attention

Ventilation system failure-Immediate evacuation of personnel is mandatory.

On-site personnel will first attempt to mitigate incedent first. If an incident on-site becomes uncontrolled, or is in excess of on-site capabilities, the facility notification procedures will be followed. Follow-up reporting will be made to the Contracting Officer and other appropriate authorities as well.

<u>Evacuation Routes and Procedures</u>

In the event of an emergency that necessitates an evacuation of the site, the following alarm procedures will be implemented and personnel will move expeditiously to the nearest exit (see attached Site Map):

1. Tank ventilation failure and/or fire or explosion hazard in the tank:

   - Two short blasts of the air horn
   - Verbal/radio warning, "Ventilation/Fire hazard, evacuate tank"

   Personnel in tank secure work areas and evacuate

The SSHO will ensure all workers are safely out of hazard area and report to Site Manager
Take corrective action to mitigate the hazard

2. Facility ventilation failure and/or fire or explosion hazard in the tanks or tunnels:

   Three long blasts of the air horn
   Verbal warning, "Ventilation/Fire hazard, evacuate tank"
   Personnel in the tank and other work areas secure work and evacuate through the nearest adit
   The SSHO will ensure all workers are safely out of the facility and report to Site Manager
   Take corrective action to mitigate the hazard

   In the event of a site evacuation is necessary, the base security and fire department will be contacted as well as the Contracting Officer.

3. Normal traffic flow patterns will be in effect unless a local detour is required.

4. The site manager will account for all employees and subcontracted personnel.

Emergency Security and Control

Following an Emergency Alarm signal, access to the site and immediate vicinity of the incident will be restricted. Depending upon the severity and location of the incident, physical barriers or banner guard will be used to delineate restricted areas. Site control will be the responsibility of the Site Manager who will establish the new work area boundaries if necessary. Future entries into restricted areas will required permission from the Site Manager.

Emergency Decontamination Procedures

Normal decontamination procedures will be modified to suit the specifics of the incident. The orderly sequence of clothing removal may be adapted to facilitate quick exit of personnel from hazardous conditions. In the event of a medical emergency, a decision will be made concerning the priority of decontaminating the patient relative to the potential for life threatening injuries. If the patient is contaminated, the outer clothing can be cut off and removed and/or the person can be wrapped in plastic or a blanket.

8.4 Mitigative Actions

Fire or Explosion

In the event of a fire or explosion, both the Contracting Officer and the Federal Fire Department will be notified. This will occur concurrently with evacuation of appropriate personnel and accounting for personnel. Upon arrival of fire department, the SM will advise the fire commander of the location, nature, and identification of the hazardous materials on-site. Upon approval of the SM and providing it can be done safely, site personnel may:

1) Use fire extinguisher or other fire fighting equipment available on-site to control or extinguish a small localized fire.

2) Remove or isolate flammable or other hazardous materials that may contribute to the fire.

3) Begin containment and recovery of the spilled materials.

Fire or Explosion

The SM will determine in the interim whether corrective action may be attempted. Corrective action may only be attempted if personnel are adequately trained and it can be accomplished safely. Portable fire extinguishers in a sufficient number and appropriate type for potential fires will be kept on site and maintained according to applicable regulations and codes.

8.5 Emergency Equipment and First Aid

Emergency Equipment Locations

The following are the emergency and first aid equipment to be utilized on-site in case of emergency:

First-Aid Kit

First-aid kits will be located in AECI's field vehicle and/or office trailer and on each level of tunnel work.

Emergency Eye Wash/Showers

Emergency eye wash will be located in the Contamination Reduction Zone and existing wash stations are located along the tunnel. Due to the nature of this project, shower facilities are not necessary.

Fire Extinguisher

A 20 pound ABC fire extinguisher will be located at each crew work site.

Emergency Basket Stretcher

A basket stretcher attached to a block and tackle will be at the tank entrance for evacuation of injured personnel inside the tank.

Spills and Leaks

AECI anticipates minimal potential for spills and leaks. As required AECI has proposed the Spill and Discharge Plan which is detailed in a following submittal. In the case of catastrophic spill, personnel will sound the alarm and evacuate in accordance with the posted evacuation procedures.

8.6 Emergency Contact/Notification System

All site telephones and vehicles will be posted with the list of emergency contact phone numbers. The list will include local emergency responders and medical facilities, and contracting officer.

8.6.1 Emergency Medical Care

In the case of medical emergency requiring evacuation by emergency response personnel call the base fire department at (808) 471-7117, they will dispatch the appropriate emergency response personnel. The nearest hospital with a trauma center to Redhill Naval Reservation is Tripler Army Medical Center on Jarret White Road. The Information phone number is (808) 433-6661 and the emergency room phone number (808) 433-6620. The nearest civilian emergency room is the Moanalua Medical Center (Kaiser Permante) located at 3288 Moanalua Road. The information phone number is (808) 834-5333 and the emergency room phone number is (808) 834-9709. The map to the hospital is attached to this plan. The mobile phone will be readily available on site at all times.

8.6.2 Emergency Phone Numbers

List of emergency phone numbers:

Agency/Facility	Contact	Phone Number
Emergency (Off-base)	Response operator	911
On-site: Base Fire	Response operator	(808) 471-7117
Tripler AMC	Emergency Room Information	(808) 433-6620 (808) 433-6661
Moanalua Medical Center	Emergency Room Information	(808) 834-9709 (808) 834-5333
Security	Response operator	(808) 471-7114
Fuel Facilities Manager	Jim Gammon	(808) 471-2390
AECI Project Manager	Jeff Bygum	(818) 967-4287
Contract Officer	Janice King	(808) 474-3371
Contract Engineer	Wes Choy	(808) 471-0170

8.6.3 Medical Training

The on-site manager and SSHO are responsible for providing-for, or obtaining, immediate

medical attention. Instances requiring "First Aid" and/or CPR treatment will be addressed on-site by qualified trained personnel. Instances requiring treatment beyond "First Aid" will be handled off-site at appropriate facilities. Any injury occurring on the site will be recorded on the site SSHO's daily report.

8.7 Medical Emergencies

In the event of a medical emergency, the following procedures will be implemented:

1. Call appropriate extension(s) on base phones (the last five digits of the full telephone number).
2. Identify location, request medical assistance, provide name and telephone number.
3. Request assistance from emergency medical service and/or additional assistance.

Any person who becomes ill or injured in the work zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first-aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First-aid should be administered while awaiting an ambulance or paramedics. All injuries and illness must be reported immediately to the Project Manager.

The Support Zone will be equipped with an approved portable eye wash unit in accordance with ANSI standard Z3581.1; an ABC type dry chemical fire extinguisher; and, a first-aid kit. As a minimum, an "industrial" first-aid kit will be provided and maintained fully stocked on site.

The first aid kit location will be specially marked. That location will also be provided with adequate water and other supplies necessary to clean and decontaminate burns, wounds, or lesions.

At least one person certified in first-aid techniques, which includes training in CPR, will be on the site at all times. These individuals may perform other duties, but must be immediately available to render first aid when needed.

The following information must be recorded and reported to the appropriate agencies:

1. Name and telephone number of person reporting incident.
2. Time and type of incident.
3. Name and quantities of material(s) involved.
4. Extent of injuries.
5. Possible hazards to human health or the environment outside the facility.
6. Corrective actions proposed.

8.8 Meeting with Emergency Response Agencies

AECI has coordinated by phone with the base fire department to ensure the emergency responders are equipped to respond to a worksite emergency at the fuels storage facility.

9.0 CONFINED SPACE ENTRY PROCEDURES

This project entails considerable confined space work.

Definition

A confined space is defined as any space, open or closed, in which poisonous, flammable, or otherwise incompatible vapors have been present or might accumulate, or where a deficiency of oxygen might occur and a lack of egress and access exists.

Examples: Above and below ground tanks, tunnels, vaults, clarifiers, open top and closed top baker tanks, rooms that meet the above criteria, excavations, tank trucks, etc.
(Note: It is absolutely forbidden to enter a flammable atmosphere. This applies to **AECI** crews and their subcontractors.)

Entry Procedure

1. No employee of **AECI** or subcontractor's employee is to enter a confined space without a confined space entry permit. This permit must be signed by the on-site supervisor, project manager, person or persons entering the confined space and the standby observer. If supplied air is being utilized, then the person monitoring the air consumption will sign the permit. The signatures will acknowledge the employee's understanding of the rules for confined space (as noted on the permit) and hazards associated with the particular task.

2. The permit is valid only for the work shift noted. For each new shift, a new permit must be obtained. All rules and procedures outlined on each subsequent permit must be followed (i.e., atmospheric testing).

3. The executed permit must be displayed in a conspicuous place at the job site. The project manager shall retain the bottom portion of the permit. All permits will be filled out in ink.

4. At the end of the work shift or when the job is completed, the displayed permit will be forwarded to the **AECI** Health and Safety Manager. All permits will become part of the permanent job file.

5. The site supervisor has the ultimate responsibility to see that all provisions of the permit are abided by.

6. The space must be certified "gas free" by an NFPA certified Marine Chemist.

Rules

1. No person shall enter any confined space where a flammable atmosphere exists.

2. Prior to entering a tank where flammable materials have been present, the area in question and associated lines will have been washed, neutralized and purged. This will be

verified by the site supervisor and health and safety coordinator before entry.

3. Where applicable, lock out and tag out procedures will be followed. Interconnecting lines will be blanked or disconnected.

4. The above procedure will be verified by the site supervisor.

5. No confined space will be entered without first monitoring the atmosphere for flammable vapors, toxic gases and oxygen deficiency. Atmospheric monitoring must continue for the entire entry period. All monitoring devices must be equipped with an audible alarm that sounds when the oxygen content drops below 20% or when 10% of the lower explosive limit (L.E.L.) is exceeded.

6. Atmosphere within the confined space must contain at least 19.5% oxygen to facilitate entry without utilizing positive pressure air-supplied respiratory protection or self-contained breathing apparatus.

7. Fresh air must be introduced into any vessel or tank to facilitate ventilation. This should be introduced near the bottom of the tank or vessel.

8. A rescue harness and lifeline must be worn by all employees entering the confined space.

9. A competent standby observer must be stationed at the entrance to the confined space the duration of the entry.

10. The standby observer must be trained in first aid and CPR.

11. The site supervisor will have instructed the standby observer in the following:

- •Hazard recognition
- •Location of nearest telephone or two-way radio
- •Location of nearest safety shower
- •Location of nearest fire extinguisher
- •Location of nearest first aid kit
- •Not to enter confined space for any reason
- •Knows how to report emergency
- •Standby observer's checklist (see attached)

12. During the entry of the confined space, the standby observer must remain in continuous contact with the worker(s). He is not to leave the entry point, except to report an emergency, until all the workers have exited the confined space.

13. In the event that an emergency should occur within the confined space, the standby observer should immediately sound the portable air horn. The standby observer should notify the proper emergency services once the alarm horn is sounded. Once the aforementioned is completed, the standby observer should return to the entry point to assist emergency services. He is not to enter the confined space.

14. A self-contained breathing apparatus or positive pressure-supplied air respirator should be on hand for every worker designated for rescue crew. (Additional employees are to be on hand to facilitate a rescue, if necessary.)

Additional Rules and Instructions

1. An observer other than the standby observer will be assigned to monitor air supply gauges if positive pressure-supplied air breathing respirator apparatus is utilized.

2. The air supply observer will notify the standby observer when the air gauges read <500 lbs pressure and all entrants instructed to exit the confined space immediately.

3. In addition to the confined space permit, a daily safety briefing shall be completed outlining the task and inherent hazards.

STANDBY OBSERVER'S CHECKLIST

1.	Valid confined space entry permit	___
2.	Harness and life line used, compliant removal mechanism	___
3.	Instruct use of life line and harness (winch if top entry)	___
4.	Location of telephone or two-way radio	___
5.	Knows how to report emergency	___
6.	Knows location of job site and report	___
7.	Knows not to leave site when employee(s) is(are) inside, except to make emergency call	___
8.	Knows NOT TO ENTER CONFINED SPACE FOR ANY REASON	___
9.	Knows location of safety shower	___
10.	Knows location of fire extinguisher and how to use it	___
11.	Understands operation of blower or other fresh air source	___
12.	Knows the operation of supplied air respirators (air line and self contained)	___
13.	Has all necessary equipment including alarm horn	___
14.	Knows how to shut off welding/burning equipment	___
15.	Hazards of job and methods to safely perform work explained	___
16.	Is trained in, and capable of identifying and enforcing all provisions of 29 CFR 1910.146	___

10.0 SPILL AND DISCHARGE CONTROL PLAN

As required by the specifications **AECI** has proposed the following plan to outline the responsibilities concerning a contaminated spill or discharge associated with the work activities.

10.1 Spill Control Materials

- **Solids** - Should contaminated soil/cake/sludge be spilled outside of the storage bin it will be recovered immediately with the appropriate equipment (i.e., shovels, brooms, etc.) and the spill site returned to a condition satisfactory to the Contracting Officer.

- **Liquids** - Should tank contents be spilled during removal or transportation on the worksite efforts will immediately be made to stop the source of the spill and contain the contents within as small an area as possible. The use of sorbent material and vacuum pumps will remediate the spill. Work will continue at the direction of the Contracting Officer.

10.2 Perform Emergency Response

AECI will provide equipment and personnel to perform emergency response measures required to contain any spills and to remove materials and soils or liquids that become contaminated due to spillage. This collected spill material will be properly disposed of in accordance with all local, state, and federal regulations.

10.3 Equipment Required

AECI will provide for any unexpected spills or discharges with the following minimum equipment to be kept on site at Adit 3 during site activities:

- 100 pounds of sand, clean fill, or other noncombustible absorbent.
- Four each, drums (55-gallon U.S. DOT 17-E or 17-H).
- Four each, shovels.
- 100 gallons of water for decontamination of tools and equipment.

10.4 Spills

AECI will report all spills and leaks, regardless of their quantity. If a spill occurs, the following actions will be taken by the Contractor:

- Notify the Contracting Officer and FISC Fuel Department immediately.
- Take immediate measures to control and contain the spill within the site boundaries. This will include the following actions:

  1. Isolate and contain hazardous spill areas.
  2. Deny entry to unauthorized personnel.

  3. Do not allow anyone to touch spilled material.
  4. Stay upwind; keep out of low areas.

5. Keep ignition system away from the spilled material.
6. Use water spray to reduce vapors and dust, as needed.
7. Take sample for analysis to determine that clean-up is adequate.
8. Other actions as needed, including agency notification when required.

10.5 Decontamination

The **AECI** will provide equipment and personnel to perform decontamination measures that may be required to remove spillage from previously uncontaminated structures, equipment, or material.

Decontamination procedures may be required after clean-up to eliminate traces of the substance spilled or reduce it to an acceptable level as determined by the Contracting Officer. Complete cleanup may require removal of contaminated soils. Personnel decontamination will include showers and cleaning, or disposal of clothing and equipment. Contaminated materials including cloth and soil that cannot be decontaminated will be properly containerized, labeled, and disposed of as soon as possible.

10.6 Notification of Spills and Discharges

Spill Report

A written spill report follow up will be prepared and submitted by **AECI** to the Contracting Officer no later than 7 calendar days after the occurrence of any spill. The report will include as a minimum, the following:

- Description of the material spilled (including identity, quantity and manifest number).
- **AECI** will notify the Base Environment Office of any spills that occur.
- Exact time and location of spill, including description of the area involved.
- Containment procedure initiated.
- Summary of any communications **AECI** had with press or Government officials other than CO.
- Description of clean up procedures employed or to be employed at the site including disposal location of spill residue.
- Laboratory reports, testing results, or verification tests which are required to validate the removal of contamination from the spill area.

11.0 ACCIDENT PREVENTION PLAN

11.1 Statement of Safety and Health Policy

AECI considers the prevention of accidents an integral part of its operation. We are vitally concerned about the human suffering and financial losses resulting from on-the-job accidents, both for the individual and the company. Therefore, the prevention of accidents is a major objective of the company, and the active and sincere cooperation of all employees is imperative.

Although providing safe working conditions is primarily a management responsibility, accident prevention can be accomplished only through coordinated efforts by all employees. Therefore, all **AECI** employees are expected to be familiar with and follow company safety guidelines.

It is **AECI's** policy that no job or service performed by an employee is so important or urgent that it cannot be performed safely. It is our policy to provide safe and sanitary conditions and promote safe practices.

We welcome suggestions from employees which will help provide safe conditions and methods.

11.2 Administrative Responsibilities

RESPONSIBILITY FOR IMPLEMENTATION OF THE COMPANY SAFETY EFFORT IS ASSIGNED TO THE SITE SAFETY AND HEALTH OFFICER (SSHO), WHO WILL ACHIEVE THIS THROUGH MONITORING THE SAFETY ACTIVITIES OF THE SITE SUPERVISORS AND WITH THE ASSISTANCE OF CONSULTANTS FROM THE COMPANY WORKERS COMPENSATION AND LIABILITY INSURANCE CARRIERS OR SPECIALISTS BROUGHT IN TO ASSIST WITH PARTICULAR CONCERNS. SITE SAFETY AND HEALTH OFFICER (SSHO) WILL BE RESPONSIBLE FOR MONITORING SAFETY MEETING REPORTS, INSPECTION REPORTS, FOLLOW-UP PROCEDURES FOR JOB SITE DISCREPANCIES, AND FOR DIRECTING SUPERVISORY TRAINING.

<u>RESPONSIBILITIES OF THE SITE PROJECT MANAGERS</u>

1. Enforce **AECI**'s safety policy at the job site.
2. Ensure that safety meetings are conducted and documented.
3. Investigate and report accidents and take corrective actions to prevent a recurrence.
4. Ensure that job site conditions meet State, Federal, company, and industry standards regarding safety and engineering requirements.
5. Establish emergency medical facilities and establish initial medical care to injured workers to ensure medical control.
6. Provide training and follow-up to project managers regarding their safety responsibilities.
7. Communicate **AECI**'s E.E.O. policy to workers and ensure compliance at all levels of the organization.
8. Ensure that all personnel forms (including W-4, I-9, Accident Reports, Emergency Notification information, etc.) are properly completed and submitted.

9. Ensure all bulletin board posting requirements are met.
10. Notify the Safety Officer of OSHA visits and citations.

RESPONSIBILITIES OF THE SITE SAFETY AND HEALTH OFFICER

1. Set an example that correctly reflects the intent of our safety program.
2. Educate employees on how to avoid creating hazardous situations.
3. Impart to each employee the understanding that violations of established safety rules will not be tolerated.
4. Enforce proper use of safety devices and personal protective equipment as required under OSHA regulations.
5. Take immediate corrective action whenever unsafe conditions or unsafe acts are reported or observed.
6. Investigate and determine the cause of all accidents or occupational health exposure. Document and report all information to the project manager, Safety Officer and company main office.
7. Conduct and document regular safety surveys of the job site.
8. Give full support to the company safety policies.
9. Provide safety indoctrination to new hires.
10. Conduct and document weekly safety meetings.
11. Notify the project manager and the Safety Officer of any OSHA visits and citations.

Although top management has the major responsibility for establishing definite safety policies, procedures, and safe working conditions, most of what is planned and established must reach the employee on the job by way of the job project manager, the person having the most frequent and closest association with employees.

RESPONSIBILITIES OF THE EMPLOYEE

All employees are required to:

1. Comply with all Federal and State safety requirements.
2. Cooperate fully with **AECI**'s corporate safety program.
3. Take proper care of company equipment and immediately report unsafe or defective equipment to your site supervisor.
4. Follow safe work habits and procedures as well as set a good example for your fellow workers.
5. Report ALL injuries as soon as possible to the supervisor or site safety officer.
6. Complete "Employee's Claim for Workers Compensation Benefits" report (State required) if injured on the job.
7. Read employee safety manual and ask questions when necessary.
8. Comply with company E.E.O. policies regarding non-discrimination.

11.3 Contractor Coordination

The site manager will coordinate work activities to minimize activity interference and control site operations so that no activity creates hazardous conditions for another site activity. The Site manager will achieve this through proper scheduling and communication with **AECI**

employees, subcontractors, suppliers, and the Contracting Officer. Subcontractors will review and comply with the SSHP and attend all safety meetings.

11.4 Safety Indoctrination and Continuation Training

Initial safety indoctrination addresses the following topics:

- Environmental Stresses/Health Concurs
- Industrial Toxicology Principles
- TLVs and PELs
- Hazard Recognition
- Chemical Hazards
- Methods of Evaluation
- Ventilation Principles
- Basics of Air Monitoring
- Biothermal Stress Control
- Noise Monitoring and Control
- Fundamentals of Respiratory Protection
- Site Safety Plans, General Requirements
- Site Safety Officer Responsibilities
- Job Hazard Analysis
- Medical Surveillance
- Employee Training and Information
- General Safe Work Practices
- Respiratory Protective Equipment
- Personal Protective Equipment
- Site Control and Decontamination
- Special Hazardous Operations
- Emergency Contingency Plans
- Site Security
- Recordkeeping Requirements
- Accident Investigation Techniques
- Case Studies

The Occupational Safety and Health Administration (OSHA) Final Rule 29 CFR, Part 1910.120 for Hazardous Waste Operations and Emergency Response Activates promulgated by SARA requires employees working at a hazardous waste site to receive forty (40) hours of initial off-site instruction.

- Three (3) days of OJT supervised by experienced staff.
- Eight (8) hour annual refresher.
- Eight (8) hour supervisor course.

Other regulatory required training:

- Annual respirator training.
- Hazard communication.
- Hearing conservation training.

Safety Meetings:

Every **AECI** employee is expected to attend a safety meeting at least once every day. These meetings are to help employees maintain safety awareness, provide special training, alert them to problems, and give them a chance to voice their concerns. Safety suggestions are encouraged during these meetings.

- Regular "tail gate" safety meetings shall be held weekly or at such other times that the site safety officer or project manager deems necessary.

- Site safety officers and project managers should hold meetings once per month or the Safety Officer should discuss safety with the project managers when he is on the job.

- Safety meetings are to be documented and attendees are to sign an attendance/subject slip.

11.5 Safe Work Practices

LIGHTING AND ELECTRICAL EQUIPMENT

A. Live parts of wiring or equipment will be grounded to protect persons or objects from harm.

B. Work areas will be adequately lighted while work is in progress.

C. Lighting systems will be placed to facilitate easy and safe accessibility for cleaning and maintenance.

D. All lighting, electrical equipment and wiring must be explosion proof wherever a concentration of vapors may occur.

MATERIAL STORAGE

A. Non-compatible materials will be segregated in storage.

B. Oxygen and acetylene will be stored separately and securely whenever they are on the jobsite.

C. No smoking, open flame, exposed heating elements, or other sources of ignition will be permitted in areas where spraypainting is done.

D. Fuel and all other flammable material stored on-site will be stored in closed, vented containers which are diked, curbed, or otherwise placed to prevent the spread of liquids in case of leakage.

E. All construction materials will be stored in areas designated by the Contracting Officer's Representative.

TOOLS AND EQUIPMENT

A. All hand tools will be kept in good repair and used only for the purpose for which designed.

B. Tools having defects that will impair their strength or render them unsafe for use will be removed from service.

C. Periodic inspections of equipment will be made by our On-Site Representative to assure safe operating condition and proper maintenance.

1. Power tools will be inspected prior to use to determine that they are in safe operating condition.

2. Safety lines will be inspected to determine that they are in good condition and that there is no frayed or weak material.

3. A regular program testing all wiring used on the site will be performed monthly or ground fault circuit interrupters will be provided.

4. Pressurized equipment and systems will be inspected and performance testing before being placed into service and after any repair or modification. Temporary or portable pressurized equipment and systems will be tested at six month intervals. Inspections and tests will be performed by qualified personnel. Any pressurized equipment or system found to be in an unsafe operating condition will be tagged at the controls, "OUT OF SERVICE, DO NOT USE".

5. All hoisting equipment will satisfactorily complete a performance test before being placed into service on this project. This test will consist of maneuvering a test load through maximum lift height, lift radius, a boom quadrant. Cranes will be tested using 125 percent of the maximum anticipated load. This test will be repeated prior to unusual or critical lifts, and after alteration, modification, repairs, or reassembly. Test records will be made a part of the official project file.

WELDING AND CUTTING OPERATIONS

A. All welding apparatus and equipment will be inspected daily.

B. All welding and cutting units will be equipped with a compatible fire extinguisher.

C. Workers in the area will have proper eye protection and be shielded from welding rays, flashes, sparks, molten metal, and slag.

D. Welding cable, hoses, and other equipment will be kept clear of passageways,

ladders, and stairways..

E. Cylinders will be kept beyond the range of sparks, hot slag, or flame.

F. Compressed gas cylinders will be handled and stored properly.

G. Switching equipment for shutting down the welding machine will be provided on or near the welding machine.

H. Non-current carrying metal parts of welding machines, etc. will be grounded.

SAFETY INSPECTIONS

In an effort to ensure safe job conditions and work practices at all **AECI**'s job sites, project managers will conduct a job safety survey to identify potential hazards. The inspecting project manager (site safety officer) will use an inspection checklist to direct his/her effort. Once completed, the checklist must be submitted to the job project manager or the inspector, then to the company headquarters for record keeping.

Observed hazards may be corrected immediately, reviewed by the job project manager and assigned to a supervisor for corrective action with a projected completion time, or reviewed by top management for corrective action with a completion date. The job project manager will be responsible for following up on all corrective actions and note the date the corrective action was completed.

Safety inspections may be conducted by the site safety officer or be delegated to a responsible individual who has been instructed in inspection procedures. Inspections will be conducted and documented at least once per month.

Any questions or problems regarding safety, will be resolved by the site safety officer, project manager, or if necessary AECI's main office (818-967-4287 Joe Mathewson, General Manager).

11.6 Accident Reporting

1. In order to provide prompt and adequate medical attention it is very important that you report all job related injuries to your supervisor immediately. If you are injured but do not see a doctor until that evening or at a later date, tell your supervisor or the office your work out of as soon as possible.

2. If you are involved in or witness an accident on the job, please cooperate with your supervisor by completing an Employee Accident Investigation Report. When required a Supervisor's report must also be completed. Your ideas about what caused the accident may help to prevent a similar occurrence. Safety is everybody's business. **SAFETY IS NO ACCIDENT.**

3. "Employee's Claim for Worker's Compensation Benefits" form must be completed by the injured employee and his project manager within 24 hours of knowledge of injury.

AECI must be notified of any injury immediately.

11.7 Emergency Response

The Emergency Response Contingency Plan is included earlier in this document.

11.8 Severe Weather Contingency Plan

In the event of severe weather (windstorms, flooding, tornados, marine storms, etc.) the site manager will task organize the work crews to secure all equipment and materials on site. Items will be moved to shelter or secured in place to prevent damage and injury from airborne objects. The contingency plan will be executed in accordance with the Environmental Protection Plan and the Site Safety and Health Plan as applicable. The site manager will make coordinations with the contracting officer and emergency response agencies as necessary in order to ensure worker safety and protect the worksite and materials.

11.9 Jobsite Safe Access and Cleanup

Safe access will be provided to all work areas. Where there is a horizontal or vertical break of 19 inches or more in a route of access, a stairway, ladder, or ramp will be provided. Job made means of access will be designed to support without failure, at least 4 times the maximum intended load. Access ways will be of sufficient width to support the ingress and egress of personnel, material, and equipment related to the job. Access ways will be inspected daily by the site safety officer and/or the site manager and maintained in a safe manner: they will be kept free of grease, mud, debris or other material which could hinder safe access in any way. Methods of access and fall protection will be implemented in accordance with EM 385-1-1 Section 21 "Safe Access and Fall Protection".

11.10 Public Safety Requirements

Temporary fencing will be provided on all projects located in areas actively utilized by the public. Signs warning of the presence of construction hazards and restricted access will be posted on all sides and at least every 300 feet. Signs will meet the specifications of EM 385-1-1 Section 8. Anticipated signs on this site are: "Hardhat Required"; "Authorized Personnel Only"; and "No Smoking".

11.11 Alcohol and Drug Abuse Prevention

The use, possession, transfer, purchase, or sale of illegal drugs, narcotics, or other unlawful substances and materials by **Aman Environmental Construction, Inc.** (hereinafter referred to as "Company") employees while on Company premises or while working for Company on other premises is absolutely prohibited. The unsafe use of either medication prescribed by a physician or otherwise lawful drugs is also prohibited.

The use, possession, transfer, purchase, or sale of firearms and other weapons by Company employees or their visitors while on Company premises or while working for Company on other premises is absolutely prohibited.

The use, possession, transfer, purchase, or sale of intoxicating beverages by Company employees or their visitors while working for Company on project job sites is absolutely prohibited.

Company will take appropriate measures with any individual found in violation of the paragraphs above.

Pending just cause, Company reserves right to contact appropriate legal agencies/outside law enforcement to search individuals, their vehicles, and personal effects when entering, while on, or when leaving its premises, or while working for Company on other premises. Such searches may be initiated by Company without prior announcement and may be conducted at such times and locations as deemed appropriate.

If deemed necessary, Company may test their employees working on its premises or while working for Company on other premises for the presence of prohibited drugs or substances.

Company also reserves the right to exclude from its premises or while working for Company on other premises, any persons, including employees working on such premises, who is suspected of using or possessing any prohibited substance or material.

Cooperation of an employee is voluntary; however, refusal of an individual to cooperate may be cause for excluding that individual from Company's premises or working for Company on other premises.

11.12 Hazard Communication Program

In compliance with General Industry Safety Orders Sec. 5194, and Director's List of Hazardous Substances 339, **AECI** has developed the following written Hazard Communication Program to enhance our employees' health and safety.

As a company, we intend to provide information about chemical hazards and other hazardous substances, and provide for the control of hazards via our comprehensive Hazard Communication Program which includes container labeling, Material Safety Data Sheets (MSDS), training, etc.

CONTAINER LABELING

It is the policy of **AECI** that no container of hazardous substances will be released for use until the following label information is verified:

1. Containers are clearly labeled as to the contents.
2. Appropriate hazard warnings are noted.
3. The name and address of the manufacturer are listed.

This responsibility has been assigned to the project managers. To further ensure that employees are aware of the hazards of materials used in their work areas, it is our policy to label all in-house containers.

The site safety officer on each project will ensure that all in-house containers are labeled with either an extra copy of the original manufacturer's label, or with generic labels which have a blank space for identity of the substance and for the hazard warning.

MATERIAL SAFETY DATA SHEETS (MSDS)

Copies of MSDs for all hazardous substances to which employees of **AECI** may be exposed are kept at the home office and at the job site. The Safety Officer will be responsible for maintaining the data sheet system for **AECI**. The Safety Officer will review incoming data sheets for new and significant health/safety information. He will see that any new information is passed on to the affected employees.

MSDS will be reviewed for completeness by the Safety Officer. If an MSDS is missing or incomplete, a new MSDS will be requested from the manufacturer. OSHA will be notified if a complete MSDS is not received.

MSDS's are available to all employees in the work area for review during each work shift. If MSDS's are not available or new hazardous substances in use do not have MSDS, please contact the Safety Officer immediately.

EMPLOYEE INFORMATION AND TRAINING

Prior to starting work, employees are to attend a health and safety orientation set up by their site safety officer for information and training on the following:

1. An overview of the requirements contained in the Hazard Communication Regulation, including their rights under the Regulation.
2. Any operation in their work where hazardous substances are present.
3. Location and availability of the written Hazard Communication Program.
4. Physical and health effects of the hazardous substances.
5. Methods and observation techniques used to determine the presence or release of hazardous substances in the work area.
6. How to lessen or prevent exposure to these hazardous substances through usage of engineering controls, work practices, and/or the use of personal protective equipment.
7. The steps **AECI** has taken to lessen or prevent exposure to these substances.
8. Emergency and first-aid procedures to follow if employees are exposed to hazardous substances.
9. How to read labels and review MSDS's to obtain appropriate hazard information.

NOTE: It is critically important that all of our employees understand the training. If you have any additional questions, please contact the Safety Officer.

When new hazardous substances are introduced, your project manager will review the above items as they are related to the new material in your work area safety meeting.

LIST OF HAZARDOUS SUBSTANCES

A hazardous substance inventory and MSDS sheets are available at **AECI**'s home office and

at each job site. To examine inventory or MSDS sheets talk to your project manager or site safety officer.

HAZARDOUS NON-ROUTINE TASKS

Periodically, employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, each affected employee will be given information by their site safety officer about hazards to which they may be exposed during such an activity. This information will include:

1. Specific hazards.
2. Protective/safety measures which must be utilized.
3. Measures that **AECI** has taken to lessen the hazards including ventilation, respirators, presence of other employees, and emergency products and procedures.

HAZARDOUS SUBSTANCES IN UNLABELED PIPES

To ensure that our employees who work on unlabeled pipes have been informed as to the hazardous substances contained within, the following policy has been established.

Prior to starting work on unlabeled pipes, our employees are to contact their site safety officer for the following information:

1. The hazardous substance in the pipe.
2. Potential hazards.
3. Safety precautions which must be taken.

INFORMING CONTRACTORS

To ensure that outside contractors work safely on our projects, it is the responsibility of the Project Manager to provide contractors with the following information:

1. Hazardous substances to which they may be exposed while on the job site.

2. Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures,

If anyone has questions about a project, contact the Safety Officer. Our jobs will be monitored by him/her to ensure that the policies are carried out and that the plan is effective.

12.0 AVAILABILITY OF HEALTH AND SAFETY PLAN

The SSHP will be available to all contractors or sub-contractors involved with hazardous waste operations on site, OSHA personnel, and any other Federal, State, or local agencies with regulatory authority over the site.

ATTACHMENT A
MATERIAL SAFETY DATA SHEETS

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8854

Material Safety Data Sheets Collection:

Sheet No. 470
Diesel Fuel Oil No. 2-D

Issued: 10/81 Revision: A, 11/90

Section 1. Material Identification

Diesel Fuel Oil No. 2-D Description: Diesel fuel is obtained from the middle distillate in petroleum separation; a distillate oil of low sulfur content. It is composed chiefly of unbranched paraffins. Diesel fuel is available in various grades, one of which is synonymous with fuel oil No. 2-D. This diesel fuel oil requires a minimum Cetane No. (efficiency rating for diesel fuel comparable to octane number ratings for gasoline) of 40 (ASTM D613). Used as a fuel for trucks, ships, and other automotive engines; as mosquito control (coating on breeding waters); and for drilling muds.

R 1
I -
S 2
K 2

NFP

HMIS
H
F
R
PPG*
* Sec.

Other Designations: CAS No. 68334-30-5, diesel fuel.

Manufacturer: Contact your supplier or distributor. Consult the latest *Chemicalweek Buyers' Guide*(73) for a suppliers list.

Cautions: Diesel fuel oil No. 2-D is a skin irritant and central nervous depressant with high mist concentrations. It is an environmental hazard and moderate fire risk.

Section 2. Ingredients and Occupational Exposure Limits

Diesel fuel oil No. 2-D*

1989 OSHA PEL	1990-91 ACGIH TLV	1988 NIOSH REL	1985-86 Toxicity Data‡
None established	Mineral Oil Mist TWA: 5 mg/m³† STEL: 10 mg/m³	None established	Rat, oral, LD_{50}: 9 g/kg produces gastrointestinal (hypermotility, diarrhe effects

* Diesel fuel No. 2-D tends to be low in aromatics and high in paraffinics. This fuel oil is complex mixture of: 1) >95% paraffinic, olefinic, naphthenic, and aromatic hydrocarbons, 2) sulfur (<0.5%), and 3) benzene (<100 ppm). [A low benzene level reduces carcinogenic risk. Fuel oils can be exempted under the benzene standard (29 CFR 1910.1028)]. Although low in the fuel itself, benzene concentrations are likely to be much higher in processing areas.
† As sampled by nonvapor-collecting method.
‡ Monitor NIOSH, *RTECS* (HZ1800000), for future toxicity data.

Section 3. Physical Data

Boiling Point Range: 340 to 675 °F (171 to 358 °C)
Viscosity: 1.9 to 4.1 centistoke at 104 °F (40 °C)
Specific Gravity: <0.86
Water Solubility: Insoluble

Appearance and Odor: Brown, slightly viscous liquid.

Section 4. Fire and Explosion Data

Flash Point: 125 °F (52 °C) min.	Autoignition Temperature: >500 °F (932 °C)	LEL: 0.6% v/v	UEL: 7.5% v/v

Extinguishing Media: Use dry chemical, carbon dioxide, or foam to fight fire. Use a water spray to cool fire exposed containers. Do not use a forced water spray directly on burning oil since this will scatter the fire. Use a smothering technique for extinguishing fire.

Unusual Fire or Explosion Hazards: Diesel fuel oil No. 2-D is a OSHA Class II combustible liquid. Its volatility is similar to that of gas oil. Vapors may travel to a source of ignition and flash back.

Special Fire-fighting Procedures: Isolate hazard area and deny entry. Since fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode and full protective clothing. If feasible, remove containers from fire. Be aware of runoff from fire control methods. Do not release to sewers or waterways due to pollution and fire or explosion hazard.

Section 5. Reactivity Data

Stability/Polymerization: Diesel fuel oil No. 2-D is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

Chemical Incompatibilities: It is incompatible with strong oxidizing agents; heating greatly increases the fire hazard.

Conditions to Avoid: Avoid heat and ignition sources.

Hazardous Products of Decomposition: Thermal oxidative decomposition of diesel fuel oil No. 2-D can produce various hydrocarbons and hydrocarbon derivatives, and other partial oxidation products such as carbon dioxide, carbon monoxide, and sulfur dioxide.

Section 6. Health Hazard Data

Carcinogenicity: Although the IARC has not assigned an overall evaluation to diesel fuels as a group, it has evaluated occupational exposures in petroleum refining as an IARC probable human carcinogen (Group 2A). It has evaluated distillate (light) diesel oils as not classifiable as human carcinogens (Group 3).
Summary of Risks: Although diesel fuel's toxicologic effects should resemble kerosine's, they are somewhat more pronounced due to additives ch as sulfurized esters. Excessive inhalation of aerosol or mist can cause respiratory tract irritation, headache, dizziness, nausea, vomiting, and ss of coordination, depending on concentration and exposure time. When removed from exposure area, affected persons usually recover completely. If vomiting occurs after ingestion and if oil is aspirated into the lungs, hemorrhaging and pulmonary edema, progressing to renal involvement and chemical pneumonitis, may result. A comparative ratio of oral to aspirated lethal doses may be 1 pt vs. 5 ml. Aspiration may also result in transient CNS depression or excitement. Secondary effects may include hypoxia (insufficient oxygen in body cells), infection, pneumatocele formation, and chronic lung dysfunction. Inhalation may result in euphoria, cardiac dysrhythmias, respiratory arrest, and CNS toxicity. Prolonged or repeated skin contact may irritate hair follicles and block sebaceous glands, producing a rash of acne pimples and spots, usually on arms and legs.
Medical Conditions Aggravated by Long-Term Exposure: None reported.
Target Organs: Central nervous system, skin, and mucous membranes.
Primary Entry Routes: Inhalation, ingestion.
Acute Effects: Systemic effects from ingestion include gastrointestinal irritation, vomiting, diarrhea, and in severe cases central nervous system depression, progressing to coma or death. Inhalation of aerosols or mists may result in increased rate of respiration, tachycardia (excessively rapid heart beat), and cyanosis (dark purplish discoloration of the skin and mucous membranes caused by deficient blood oxygenation).
Chronic Effects: Repeated contact with the skin causes dermatitis.
FIRST AID
Eyes: Gently lift the eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.
Skin: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. If large areas of the body have been exposed or if irritation persists, get medical help immediately. Wash affected area with soap and water.
Inhalation: Remove exposed person to fresh air and support breathing as needed.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. If ingested, *do not induce vomiting* due to aspiration hazard. Contact a physician immediately. Position to avoid aspiration.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians: Gastric lavage is contraindicated due to aspiration hazard. Preferred antidotes are charcoal and milk. In cases of severe aspiration pneumonitis, consider monitoring arterial blood gases to ensure adequate ventilation. Observe the patient for 6 hr. If vital signs become abnormal or symptoms develop, obtain a chest x-ray.

Section 7. Spill, Leak, and Disposal Procedures

Spill/Leak: Notify safety personnel, evacuate area for large spills, remove all heat and ignition sources, and provide maximum explosion-proof ventilation. Cleanup personnel should protect against vapor inhalation and liquid contact. Clean up spills promptly to reduce fire or vapor hazards. Use a noncombustible absorbent material to pick up small spills or residues. For large spills, dike far ahead to contain. Pick up liquid for reclamation or disposal. Do not release to sewers or waterways due to health and fire and/or explosion hazard. Follow applicable OSHA regulations (29 CFR 1910.120). Diesel fuel oil No. 2-D spills may be environmental hazards. Report large spills.
Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.
EPA Designations
RCRA Hazardous Waste (40 CFR 261.21): Ignitable waste
CERCLA Hazardous Substance (40 CFR 302.4): Not listed
SARA Extremely Hazardous Substance (40 CFR 355): Not listed
SARA Toxic Chemical (40 CFR 372.65): Not listed
OSHA Designations
Air Contaminant (29 CFR 1910.1000, Subpart Z): Not listed

Section 8. Special Protection Data

Goggles: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133).
Respirator: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use a NIOSH-approved respirator with a mist filter and organic vapor cartridge. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.*
Other: Wear impervious gloves, boots, aprons, and gauntlets to prevent skin contact.
Ventilation: Provide general and local explosion-proof ventilation systems to maintain airborne concentrations that promote worker safety and productivity. Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.[103]
Safety Stations: Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.
Contaminated Equipment: Never wear contact lenses in the work area: soft lenses may absorb, and all lenses concentrate, irritants. Remove this material from your shoes and equipment. Launder contaminated clothing before wearing.
Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

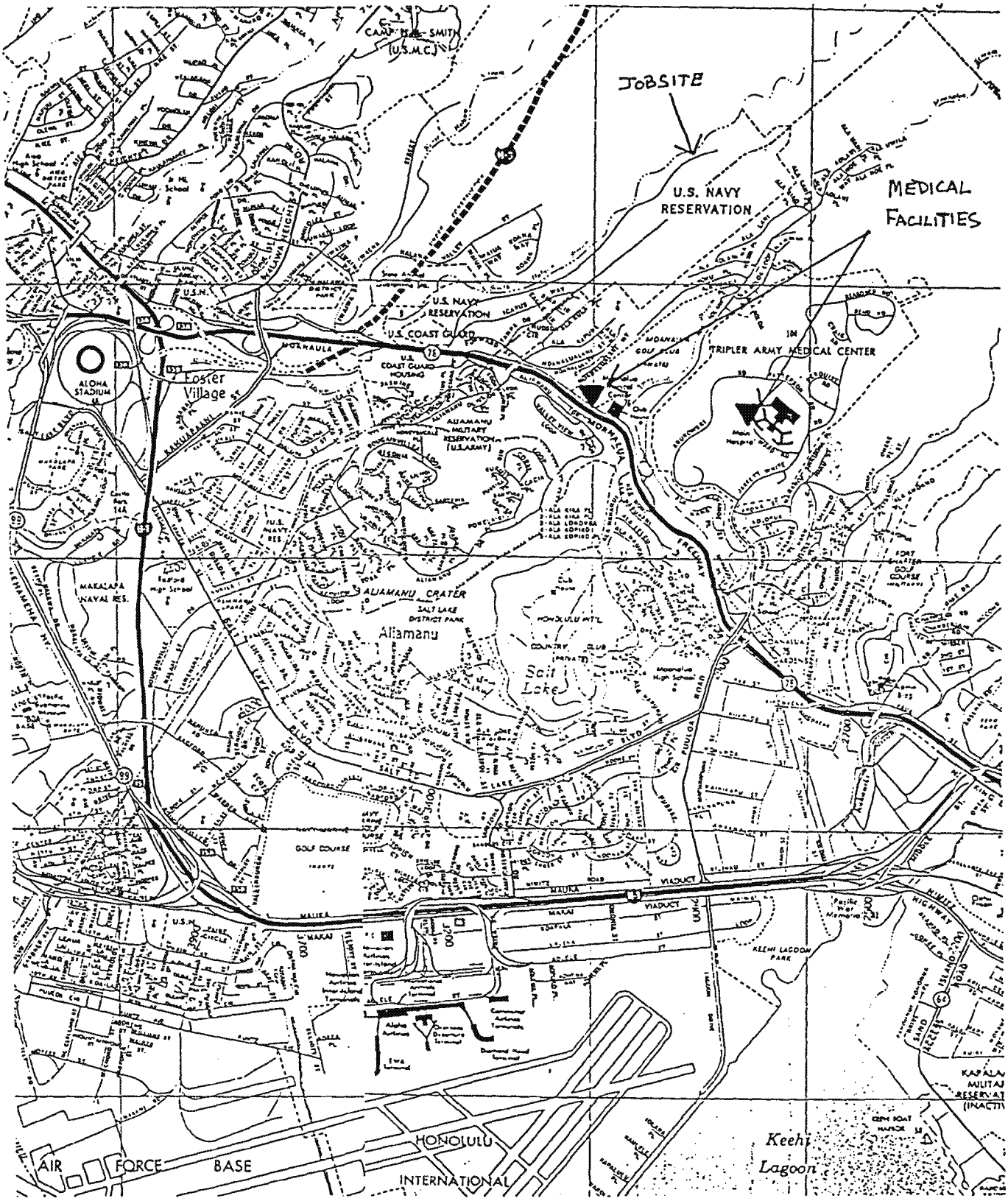
Section 9. Special Precautions and Comments

Storage Requirements: Use and storage conditions should be suitable for a OSHA Class II combustible liquid. Store in closed containers in a well-ventilated area away from heat and ignition sources and strong oxidizing agents. Protect containers from physical damage. To prevent static sparks, electrically ground and bond all containers and equipment used in shipping, receiving, or transferring operations. Use nonsparking tools and explosion-proof electrical equipment. No smoking in storage or use areas.
Engineering Controls: Avoid vapor or mist inhalation and prolonged skin contact. Wear protective rubber gloves and chemical safety glasses where contact with liquid or high mist concentration may occur. Additional suitable protective clothing may be required depending on working conditions. Institute a respiratory protection program that includes regular training, maintenance, inspection, and evaluation. Practice good personal hygiene and housekeeping procedures. Do not wear oil contaminated clothing. At least weekly laundering of work clothes is recommended. Do not put oily rags in pockets. When working with this material, wear gloves or use barrier cream.
Transportation Data (49 CFR 172.101)
DOT Shipping Name: Fuel oil
DOT Hazard Class: Combustible liquid
ID No.: NA1993
DOT Label: None
DOT Packaging Exceptions: 173.118a
DOT Packaging Requirements: None

MSDS Collection References: 1, 6, 7, 12, 73, 84, 101, 103, 126, 127, 132, 133, 136, 143, 146
Prepared by: MJ Allison, BS; Industrial Hygiene Review: DJ Wilson, CIH; Medical Review: AC Darlington, MD; Edited by: JR Stuart, MS 97

ATTACHMENT B
MAP TO NEAREST MEDICAL FACILITIES

MAP TO NEAREST MEDICAL FACILITIES



ATTACHMENT C
EMPLOYEE TRAINING CERTIFICATES

Certificate of Attendance

Nº 1198

Ecologics Training Institute

This is to Certify that

MICHAEL MEDVED

Has Completed the Course of

OSHA HAZARDOUS WASTE ANNUAL REFRESHER (8 HOURS)

JOHN DALY
INSTRUCTOR

ARMANDO DUCOING
DIRECTOR

MAY 13, 1994	E051394HWR	MAY 13, 1995
COMPLETION DATE	CERTIFICATE NUMBER	CERTIFICATE EXPIRES

A DIVISION OF ECOLOGICS ENVIRONMENTAL CONSULTING COMPANIES

4125 E. LA PALMA AVENUE, SUITE 300
ANAHEIM, CALIFORNIA 92807

RDHLCC0001489

Certificate of Attendance

NFM

This is to Certify that

BAIRD REIMER

Has Completed the Course of

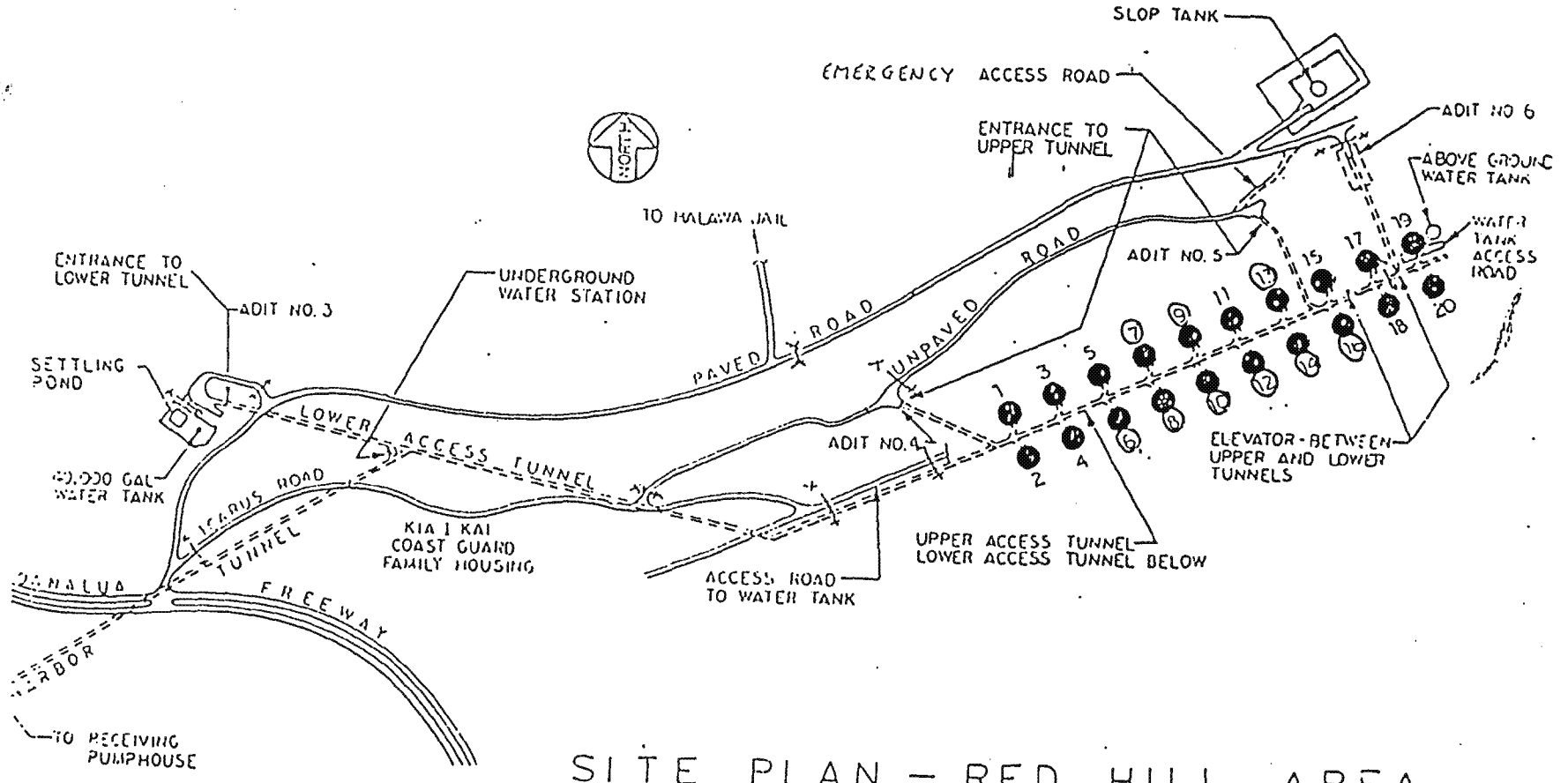
OSHA 8-Hour HAZWOPER Refresher

INSTRUCTOR

June 6, 1994	15N060694HWR	June 6, 1995
COMPLETION DATE	CERTIFICATE NUMBER	CERTIFICATE EXPIRES

National Fire and Medical Services, Inc.
20 Perry Avenue • Buzzards Bay, MA 02532 • Tel. 508-759-5454
P.O. Box 3953 • Palos Verdes, CA 90274 • Tel. 310-833-5606

ATTACHMENT D
SITE MAPS

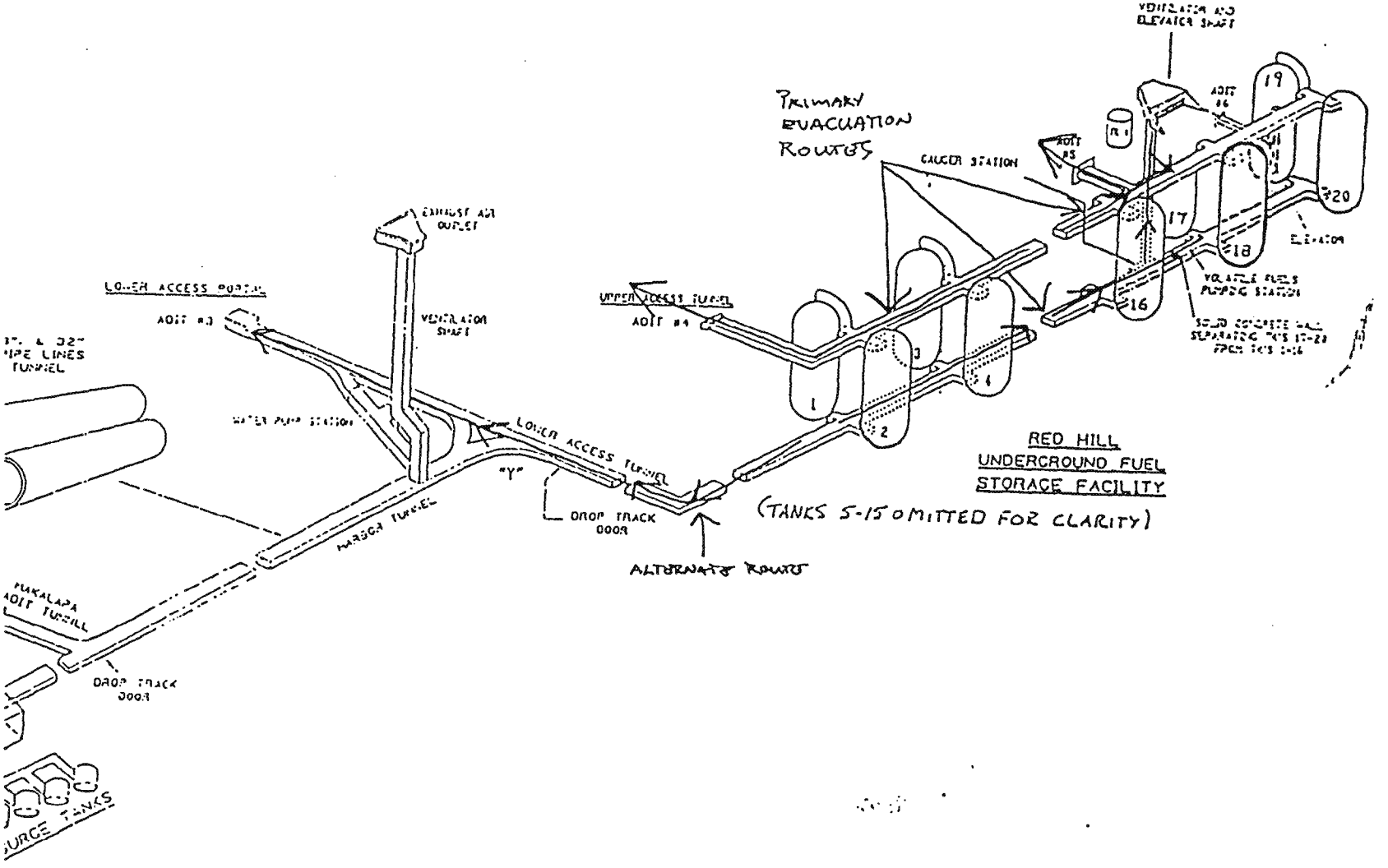


SITE PLAN – RED HILL AREA

SITE MAP

RDHLCC0001492

BWS028864



RED HILL FUEL STORAGE FACILITY

EVACUATION ROUTE MAP

ATTACHMENT E
SAFETY REPORT

AECI
SAFETY MEETING REPORT

AMAN ENVIRONMENTAL CONSTRUCTION, INC.

Project _____ Date _____ Time _____ AM/PM

Project Number _____ Project Location _____

Client _____ Client Address _____

_____

_____

— SAFETY TOPICS —

Hospital / Clinic _____ Phone (_____) _____

Hospital Address _____

Police Dept. (_____) _____ Paramedic (_____) _____ Fire Dept. (_____) _____

Specific Instructions _____

_____

Chemical Hazards _____

_____

Physical Hazards _____

_____

Respiratory Protective Equipment

_____

Safety / Personal Protective Equipment / Clothing (List specifically for each activity) _____

_____

Emergency Procedures _____

_____

— ATTENDEES —

NAME (Please Print)	NAME (Signature)

Meeting Conducted By _____ _____

*DO NOT LEAVE ANY BLANK SPACES. PUT N/A IF NOT APPLICABLE.

WHITE COPY — OFFICE FILE / YELLOW COPY — JOB SITE FILE

NAVFAC FORM 4330/34 (REV 2-87)
O/P/PWC-PH 4330/10(5-89) S/N 0105-LF-003-3172

DAILY REPORT TO INSPECTOR WR # _____ DO # _____

DATE

CONTRACT NO.	TITLE AND LOCATION	REPORT NO.
N62755-91-D-2904.		

CONTRACTOR *(Prime or Subcontractor)*	NAME OF SUPERINTENDENT OR FOREMAN
WEATHER	TEMPERATURE °F
WEATHER EFFECTS	

PRIME CONTRACTOR/SUBCONTRACTOR WORKFORCE
(If space provide below is inadequate, use additional sheets)

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION AND DESCRIPTION OF WORK PERFORMED

TOTAL WORK HOURS ON JOB SITE THIS DATE		WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? ☐ YES ☐ NO IF "YES", A COPY OF THE COMPLETED OSHA REPORT IS REQUIRED
CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT		
TOTAL WORK HOURS FROM START OF CONSTRUCTION		

CONSTRUCTION AND PLANT EQUIPMENT LEFT ON JOB SITE UNTIL USE IS COMPLETED

DESCRIPTION	DATE FIRST ON JOB *(First time only)*	HOURS WORKED THIS DATE	HOURS IDLED	DATE OF FINAL REMOVAL FROM JOB SITE

CONSTRUCTION AND PLANT EQUIPMENT NOT LEFT ON JOB SITE PERMANENTLY
(This will include pickup trucks and mobile mounted items, such as compressor, that are also used for transprotation to and from the job)

DESCRIPTION	HOURS WORKED	HOURS IDLED

RDHLCC0001496

BWS028868

SPEC. PARA. AND/OR DRAWING NO.	LOCATION AND DESCRIPTION OF DEFICIENCIES *(Materials, Equipment, Safety, and/or Workmanship)* ACTION TAKEN OR TO BE TAKEN

DEFICIENCIES CORRECTED THIS DATE	REFERENCE	
	REPORT NO.	COMPLIANCE NOTICE NO.

INSPECTION AND/OR TESTING PERFORMED TODAY-FOLLOW WITH REPORT	LOCATION AND/OR ELEMENT OF WORK	REMARKS RESULTS OF INSPECTION/TESTING

SPEC. PARA. AND/OR DRAWING NO.	EQUIPMENT/MATERIAL RECIEVED TODAY TO BE INCORPORATED IN JOB *(Description, Sizes, Quantity)*	SUBMITTAL NO. OR CERTIFICATION	DATE APPROVED

REMARKS (Include directions received from JOC Rep, visitors, compliance notices received, errors and/or omisions in P/S; pertinent information)

CONTRACTOR/SUBCONTRACTOR DATE

QUALITY CONTROL REP'S REMARKS AND/OR EXCEPTIONS TO THIS REPORT

QUALITY CONTROL REP DATE

O/P/PWC-PH 4330/10(5-89)

ATTACHMENT F
CONFINED SPACE PERMIT

CONFINED SPACE ENTRY PERMIT INSTRUCTIONS

- TEAR OFF THIS SHEET, PERMIT BELOW -

The following instructions provide information concerning filling out the attached confined space entry permit. Additional information is provided on good confined space entry practice. This is not a substitute for training on confined space entry operations and associated hazards. Each section of the permit is briefly covered below. All equipment and information shall be filled in or checked off.

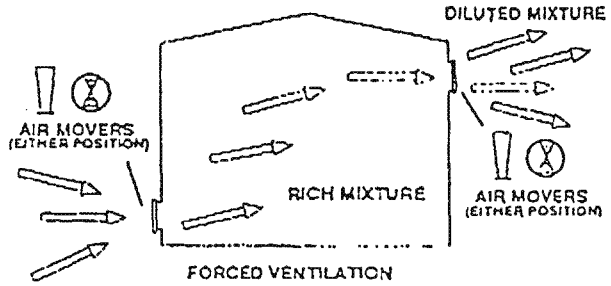
SCOPE

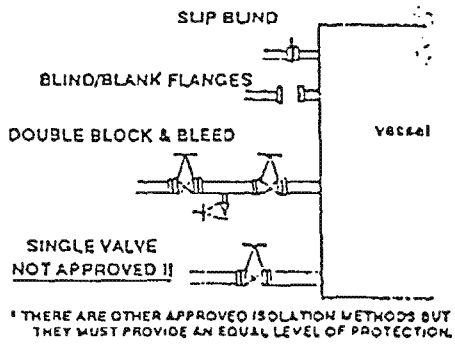
Confined space entry permits are effective for one (1) work shift. Should the confined space be abandoned for more than one hour, the atmosphere must be tested prior to commencing the work. The permit is "issue to" a specific client/job and must be posted in a conspicuous place close to the entrance of the confined space. The "specific location" must describe the precise vessel or area. A new permit shall be issued or original permit re-issued whenever work conditions or activity introduce new hazard.

PREP. (PREPARATION)

Adequate preparation of a confined space includes washing, cleaning, rinsing, purging and ventilating. The method shall be dependent upon the product in the space or vessel. Initial cleaning shall be done from outside the space if at all possible.

Isolation and neutralization of all energy sources shall be specific to each confined space. Energy sources include electric, hydraulic, pneumatic, stored energy, and momentum sources. These sources shall be identified and neutralized to a zero energy state following proper Energy Control (Lockout/Tagout) procedures. Examples of vessel piping isolation methods are described below.





FRESH AIR IN

Forced air ventilation should be used to purge hazardous atmospheres from vessel and should be maintained during entry.

ATMOSPHERE TESTING

The atmosphere of a confined space can be potentially toxic, flammable, oxygen deficient, or corrosive. Testing of the atmosphere is required prior to entry and periodically thereafter. Evaluating the atmosphere for flammability, oxygen concentration, and hydrogen sulfide are normally standard, although other contaminants may have to be evaluated specifically. Due to possibility of offgassing or outgassing, or other rapid atmosphereic changes, continuous monitoring should be used.

All testing instruments must be calibrated and field calibrated in clean environment.

When testing a confined space, test different levels because of the stratification of vapors and gases.

NO ENTRY SHALL BE MADE IN FLAMMABLE ATMOSPHERES OVER 10% OF THE LOWER EXPLOSIVE LIMIT (L.E.L.).

3-5 OFFENSIVE ODOR
10 PERMISSIBLE EXPOSURE LIMIT (OSHA)
50-100 THRESHOLD OF SERIOUS EYE INJURY
1000-2000 IMMEDIATE COLLAPSE WITH RESPIRATORY PARALYSIS

HYDROGEN SULFIDE EFFECTS (PPM)

>23.5% DANGER OXYGEN ENRICHED
21% NORMAL AIR
19.5% MINIMUM FOR SAFE ENTRY
16% IMPAIRED JUDGEMENT AND BREATHING
6% DEATH IN MINUTES

OXYGEN SCALE (%)

METHANE (LIGHTER THAN AIR)
CARBON MONOXIDE (SAME AS AIR)
HYDROGEN SULFIDE (HEAVIER THAN AIR)

Evaluate air quality at all levels

PROTECTIVE EQUIPMENT

CSE operations shall be barricaded in order to provide a clear work area and to keep unauthorized personnel out.

All portable electric equipment must be equipped with a ground fault circuit interupter (GFCI). All lighting must be low voltage and of explosion proof design.

Any equipment which may generate a static charge must be adequately grounded and bonded. (examples: hydroblasters, steam machines, hose nozzles, vacuum trucks, guzzlers, etc.)

Ladders must be properly secured when in use.

Vertical entry operations over five (5) feet may need special fall arresting and retrieval equipment.

A qualified person must determine personal protective equipment needed by all personnel entering confined spaces; including rescue personnel. Consideration must be given to potential dusts, vapors, mists, corrosive material, flying objects, high noise generating equipment, slippery footing and other hazards.

Personnel using respiratory equipment must be trained and medically approved. Negative pressure respirators are "not approved" for confined ace entry use unless approved by The Allwaste Safety Department.

Personnel using impervious clothing or rain slickers must be carefully monitored for heat stress.

EMERGENCY ACTION

Emergency Phone number should be boldly written into the box for emergency response. If a phone is not available, a base station call name may be used like "Control or Base". Also, boldly write in the location of the nearest phone or radio.

Emergency Phone Number [911] or [ ] Control or Base Station _____

If the lease or area has an Emergency Response Team (ERT), they should be notified that a confined space entry operation is being conducted and the location.

RESCUE EQUIPMENT NEEDED

Rescue action is best taken from outside of a confined space utilizing retrieval. This is especially true for vertical entry situations greator than 5 feet in depth (examples: manhole, tank with top entry only, utility vault, etc.). The use of full body harnesses and lifelines, and rescue winches are examples of retrieval equipment. The type of retrieval equipment needed will depend upon specific circumstances, size and location of openings, number of entrants, or whether rescue would be horizontal or vertical.

CSE COMMUNICATION

The observer or standby person must be able to communicate with entry personnel at all times. Whichever method is of communication is used, all members of the confined space entry team must be able to understand and use the systems.

POTENTIAL EMERGENCY SITUATION(S) AND ACTIONS TO BE TAKEN

This section should describe potential emergency situation(s) which may occur during this entry job and proper actions to be taken if they should occur. (examples: major injury, minor injury, hazards external to the confined space (ie, gas release).

SIGNATURE ACKNOWLEDGEMENT

This section must be signed acknowledging that all personnel involved have performed the proper testing, preparation, equipment selection, and rescue planning prior to starting the job.

CONFINED SPACE ENTRY INTO EXCAVATIONS OR TRENCHES MUST BE CONDUCTED BY CAL/OSHA PERMITTED COMPANIES ONLY AND IN POSESSION OF ANNUAL AND JOB PERMITS.

ADDITIONAL INFORMATION ON THE SPECIFIC REQUIREMENTS OF CONFINED SPACE ENTRY CAN BE FOUND IN CALIFORNIA TITLE 8, SECTION 5156-5159, FEDERAL 29CFR 1910.146, AND THE ALLWASTE ENVIRONMENTAL SERVICES AND PROCEDURE GUIDELINES.

ADDITIONAL EMERGENCY WRITTEN PROCEDURE SPACE (IF NEEDED)

POTENTIAL EMERGENCY SITUATIONS

ACTIONS TO BE TAKEN

ADDITIONAL ATMOSPHERE TESTS

FLAMMABLE			H2S			OXYGEN			OTHER		
TIME	%	INITIALS	TIME	PPM	INITIALS	TIME	%	INITIALS	TIME	PPM	INITIALS

RDHLCC0001500

ALLWASTE ENVIRONMENTAL SERVICES

CONFINED SPACE ENTRY PERMIT

SCOPE

Effective date _____ 19____ Time _____ AM PM Expiration date _____ Time _____ AM PM

Permit issued to _____

Description of Work _____

Lease or Area _____ Specific Location _____

PREP.

☐ Equipment/piping depressurized & vented
☐ Powered (forced air) ventilation
☐ Other _____
☐ Equipment/piping blinded, blanked, or misaligned
☐ Electric, hydraulic, pneumatic & mechanical energy sources shut-off & locked out.
☐ Vessel/space steamed, cleaned, or washed

ATMOSPHERE TESTING

Type	☐ Flammable	☐ Oxygen	☐ Hydrogen sulfide	BENZENE (ppm)	TOLUENE (ppm)	XYLENE (ppm)	_____ (ppm)	_____ (ppm)	☐ Continuous Monitoring
Time									Instrument
% LEL or PPM									Most Recent Calibration data
Tested by									Field Calibration O.K. ☐
Action Levels	10% L.E.L.	LESS THAN 19.5% MORE THAN 23%	PPM	0.5 PPM	50 PPM	50 PPM	Carbon Monoxide (20 ppm), Aromatic Hydrocarbon (5 ppm) Ammonia (12 ppm), Mineral Spirits (50 ppm), Methanol (100 ppm)		

PROTECTIVE EQUIPMENT

OPERATIONAL AND PROTECTIVE EQUIPMENT

☐ Warning signs, barricades
☐ Barricade tape/cones
☐ Ventilation Fan or Blower
☐ Fire extinguisher
☐ Ground fault circuit interupter
☐ Lighting (hazardous location rated)
☐ Grounding and/or Bonding
☐ Ladder
☐ Other _____

PERSONAL PROTECTIVE EQUIPMENT

☐ Self Contained Breathing Apparatus
☐ Airline supplied respirator
☐ Chemical splash goggles
☐ Impervious gloves
☐ Impervious clothing
☐ Boots
☐ Hearing protection
☐ Safety glasses
☐ Fall protection/arresting equipment
☐ Other _____

EMERGENCY ACTION

RESCUE PROCEDURES AND EQUIPMENT

Emergency Phone Number _____ Control or Base Station _____

Location of Phone/Radio _____

RESCUE EQUIPMENT NEEDED

☐ Full body harness/lifeline
☐ Rescue winch
☐ Davit/Tripod
☐ Other _____

CSE COMMUNICATION

☐ Radio communication
☐ Rope signals
☐ Visual hand signals
☐ Other _____

POTENTIAL EMERGENCY SITUATION(S) _____

ACTIONS TO BE TAKEN _____

SIGNATURE

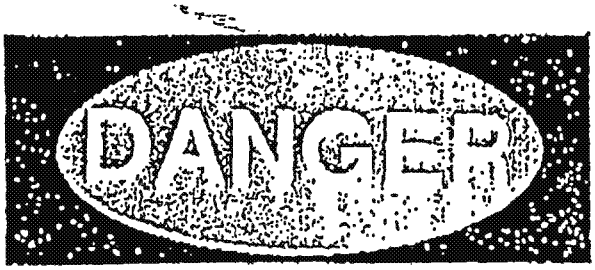
CONFINED SPACE ENTRANT(S)
We(I) have reviewed the potential emergency situations and actions to be taken. We(I) are familiar with all rescue equipment, and communication methods. See entrant employee roster section of the permit for additional signatures.

_____ _____ _____

CONFINED SPACE OBSERVER/STANDBY
I have checked all rescue and communication equipment and reviewed all emergency actions to be taken with entrant personnel.

_____

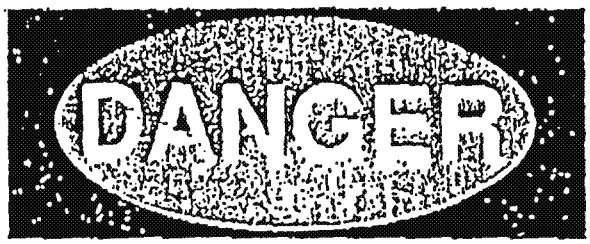
QUALIFIED PERSON/SUPERVISOR
I have evaluated properly and completed all portions of this permit. All personnel have reviewed the conditions of the permit and are adequately trained to perform this job.



Do Not Remove This Tag

This Tag To Be Removed Only By Authorized Supervisor After An Approved Entry Permit Has Been Hung

See Other Side



Do Not Enter

Equip. No. or Services _____

Reason Tagged _____

_____

Signed By _____ Date _____

MFG-4508 (OS-5-80)
Printed In U.S.A.

CONTRACT EMPLOYEE ROSTER

DATE _____

We(I) have reviewed the potential emergency situations and actions to be taken. We(I) are familiar with all rescue equipment and communication methods.

	NAME	ID #	TIME-IN	TIME-OUT
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

LOG OF INSPECTIONS AND TESTS BY COMPETENT PERSON

(See other side for instructions)

Job. No. Date

Vessel Type Berth Report No.

Name of Space (Last Cargo)	Operation	Date	Time	Result of Test (Instrument Used)	Instructions	Initial