

(b) (6), (b) (3) (A), (b) (4)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	058		
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)		
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023		
QV Engineer	(b) (6)	Phone	(b) (6)	Email	(b) (6)@hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference					
NDA	46	Harbor Tunnel	(b) (3) (A)					
Repair Description	Severe corrosion w/ significant loss of material at any number of locations, impacted and deformed column flanges. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648					
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.					
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023							
Rework Needed		Photo Record Attached	Repair Work Validated as Complete					
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No	See Page 2.	<input checked="" type="radio"/>	Yes	<input type="radio"/>	No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	059
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6)@hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	46	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, moderate column corrosion, complete loss of section at JP-5 and F-24 anchor to wall (b) (3) (A). Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A), (b) (6)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	060
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	46	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, column moderately corroded, JP-5 anchor to wall complete section loss. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	061
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS- (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDA	46	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, extreme corrosion at bottom of column and significant loss of column flange section at baseplate interface. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE (b) (6)	
	DATE 06 JUN 2023	

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	062
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS. (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	46	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, column flanges completely deteriorated at slab, baseplate is dust, JP-5 attachments to wall completely corroded - not attached at (1) side. (continued in Comments below)		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

(cont.) "Extreme corrosion w/ no or very little material at any number of locations, column flanges completely deteriorated at slab, baseplate is dust, JP-5 attachments to wall completely corroded - not attached at (1) side. API 570: Corrosion on base of pipe support (attachment to tunnel floor). Repair/replace support."

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Existing condition of pipe support at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	063
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	46	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, JP-5 at wall. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	064
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6)@hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	46	Harbor Tunnel	(b) (3) (A)
Repair Description	Severe corrosion w/ significant loss of material at any number of locations, grout pad broken, loss of bearing. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE (b) (6)
	DATE 06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	065
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS. (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6)@hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	066
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	067
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDA	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	068
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	069
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6)@hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, extreme delamination at baseplate, columns not attached due to extreme deterioration, JP-5 bracket to the wall deteriorated and detached. (continues in Comments below)		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
<input checked="" type="radio"/>	No	See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

(cont.) "API 570: Corrosion on base of pipe support (attachment to tunnel floor). Repair/replace support."

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	070
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, extreme corrosion at baseplate and column flanges, appears unattached and detached when sounded. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	071
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, wall anchor not visible, flanges at angle column not attached to baseplate, severe delamination at baseplate. API 570: Support wear plate to support not engaged (JP-5) (floating pipe). Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
<input checked="" type="radio"/>	No	See Page 2.	<input checked="" type="radio"/>
			Yes
			<input type="radio"/>
			No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE (b) (6)	
	DATE 06 JUN 2023	

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Gap between pipe and support before repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	072
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6)@hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion at any number of locations, severe corrosion over entire support complete loss of support at bottom of both columns and both flanges, delamination (severe) at baseplate, angles to wall severely deteriorated. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	073
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion at any number of locations, complete deterioration through bottom front flange of both columns, extreme deterioration of anchor bolts over back flange of both columns. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	074
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS ^{(b) (3) (A)}
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6)@hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	Pipe Support 510
Repair Description	Corrosion to loss of support, wall anchors not visible. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

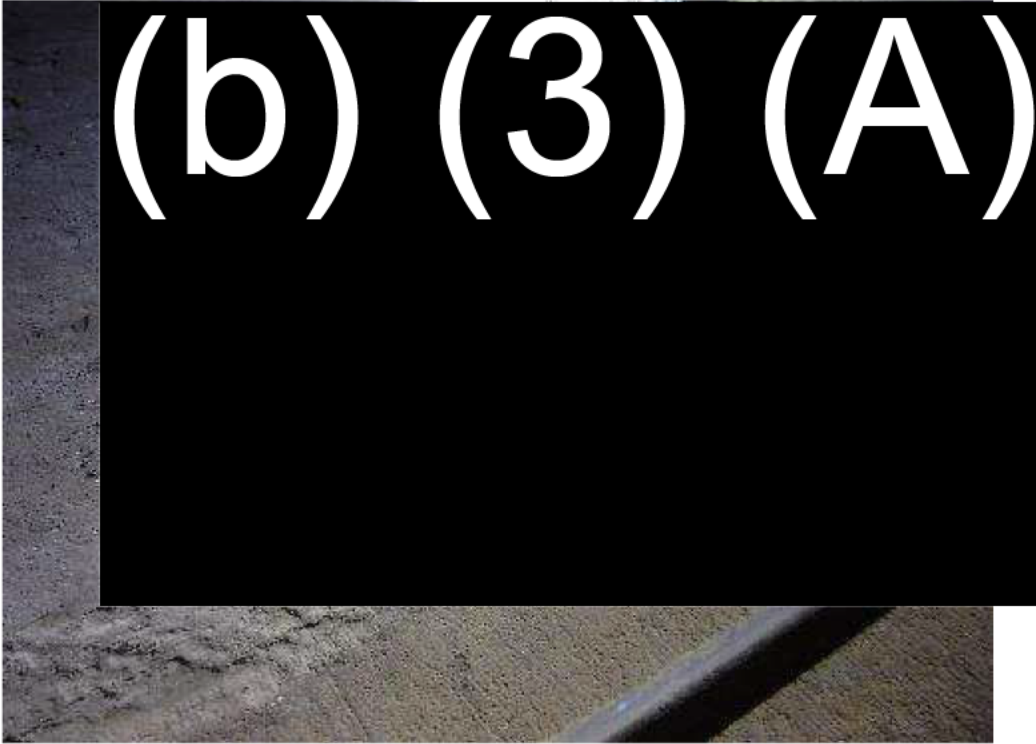
Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel



Existing condition of pipe support at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	075
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDA	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Extreme corrosion w/ no or very little material at any number of locations, active dripping. Repair/replace support. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
<input checked="" type="radio"/>	No	See Page 2-4	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	076
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS ^{(b) (3) (A)}
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Severe corrosion and loss of support at baseplate and lower column connection. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2-5	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Existing condition prior to pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Close-up of replacement (b) (3) (A)

(b) (3) (A)

Close-up of replacement (b) (3) (A)

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)



Close-up of lower wall anchor of replacement (b) (3) (A)

(b) (3) (A)



Close-up of upper wall anchor of replacement (b) (3) (A)

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Comparison: close-up of existing pipe support material.

(b) (3) (A)

Comparison: close-up of new pipe support material at (b) (3) (A)

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	077
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	PS (b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	06 JUN 2023
QV Engineer	(b) (6)	Phone	(b) (6)
		Email	(b) (6) @hdrinc.com

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NDAAs	45	Harbor Tunnel	(b) (3) (A)
Repair Description	Severely corroded base plate and bottom of column, loss of steel in column, delamination of base plate, no grout pad, F-24 connected to wall severely corroded. Repair/replace support.		Source Contract Reference 47QSHA18D000Y W912DY21F0025 Service Order 648
Description of Contractor QC Method(s) Used	Methods outlined in detail in QCP. Visual Examination of Pipe Support frames and brackets by 3rd party NDE.		Contractor QC Records Reviewed QCP and Daily Reports.
Description of QA Validation and Observations	QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results. Final acceptance by government. Date: 16 MAY 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparison of new support vs. old support and material data provided for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	06 JUN 2023

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (3) (A)

Pipe support repair at (b) (3) (A)

(b) (4)

Visual Testing Report

Report No: M042123-11 (r1) Project No: RHL-PND-648 Project Name: Redhill Harbor Tunnel Pipe Support

Part Number: N/A Drawing Number: #1 Rev: E

Description of item(s) examined: Redhill Tunnel Piping Supports

Procedure No: BNDT-PR-VT-01 Rev: 1 Applicable Code: AWS D1.1 Edition: 2020

Reference NCR No. (If applicable): N/A Examination Date: Friday, April 21, 2023

Note: All diagonally shaded areas below are to be considered N/A (Not Applicable)

MT&E:					Materials:			
Item Description	Make	Model	MT&E	Due Date	Item Description	Heat/Lot/Batch No.	Thickness	Material Type
					Angle/Channel	N/A	(b) (3)	CS

Tools / Gauges Used							
<input type="checkbox"/> Tape Measure	<input type="checkbox"/> Ruler	<input checked="" type="checkbox"/> Fillet	<input checked="" type="checkbox"/> Caliper	<input type="checkbox"/> Hi/Lo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Bridge cam	<input type="checkbox"/> Taper	<input checked="" type="checkbox"/> V-Wac	<input type="checkbox"/> Angle Finder	<input type="checkbox"/> Mirror	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: Inspection must be done at ambient temperature. Ambient Temp: Yes No

Stud Weld (Only)	Lighting:	COTS: (Non-ASME)	Surface Condition:	Heat Treatment:
<input type="checkbox"/> Pre Production (First 10)	<input checked="" type="checkbox"/> Flashlight <input type="checkbox"/> Natural Light	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Explain below:	<input checked="" type="checkbox"/> As Welded	<input type="checkbox"/> Before PWHT <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Production studs	<input type="checkbox"/> Droplight <input type="checkbox"/>		<input type="checkbox"/> Other: _____	<input type="checkbox"/> After PWHT

Evaluation of Weld(s) / Item(s) Inspected (Note: All dimensions are in inches)

Weld / Item Number	Welder Stencil(s)	Technique		Weld Types				Weld Pass					Dimensions			Evaluation					Remarks / Generated NCR# (if applicable)				
		Direct	Remote	Stud	Fillet	PJP	CJP	Slot / Plug	Tack	Root	Inter	Final	Excavation	Specified	Actual	Gap	*Indication(s)	Relevant	Non-Relevant	Accept		Reject	Percent %		
(b) (3) (A)	0039	X			X								X		1/4	Var						X			Repairs #77, #76, & #75
	0039	X			X								X		1/4	Var						X			Repairs #74, #73, #72, #71, #70 & #69
	0039	X			X								X		1/4	Var						X			Repairs #68, #67, #66, #65, #64 & #63
	4456	X			X								X		1/4	Var						X			Repairs #62, #61, #60, #59, & #58

*Indication Type [1]=Porosity, [2]=Internal Undercut, [3]=External Undercut, [4]=Spatter, [5]=Profile, [6]=Crack, [7]=Overlap, [8]=Lack of Fusion, [9]=Excessive Reinforcement, [10]=Ark Strike, [11] Cleanliness, [12]=Tungsten Inclusion, [13]=Pockmark, [14]=Burn Through, [15]=Incomplete Penetration, [16]=Concave Root, [17]=Convex Root, [18]=Oversized Weld, [19]=Image Artifact, [20]=Irregular Geometry, [21]=Linear Indication, [22]=Spherical (Rounded) Indication, [23]=Cylindrical (Elongated) Indication, [24]=lamination, [25]=Other Indication (Specify): _____, [26]=No Relevant Indications

Notes: Multiple fillet welds exceeded 1/4 inch. This is acceptable on all weld other than Lap joints IAW AWS D1.1.

Examined by **(b) (6)**
Signature

ASNT VT III
NDT Level
4/21/23
Date

Assisted by: N/A
Print Name
Date

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

Comparison: close-up of existing pipe support material.

(b) (3) (A)

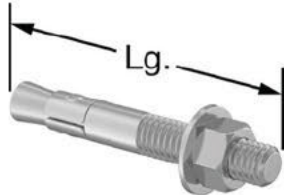
Comparison: close-up of new pipe support material at (b) (3) (A)

(b) (4)

Steel Stud Anchor for Concrete

7/8" Diameter, 8" Long

(b) (4), (b) (5)
Each
91578A224

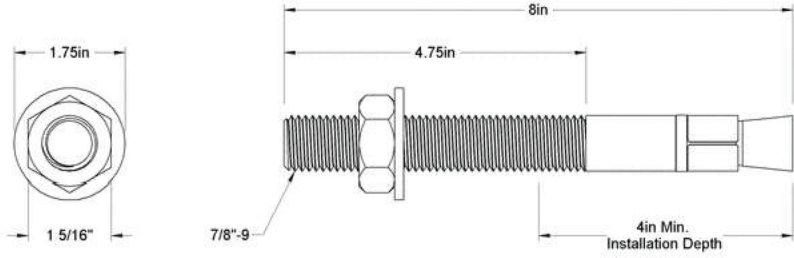


Material	Zinc-Plated Steel
Diameter	7/8"
Length	8"
Thread Size	7/8"-9
Screw Size	7/8"
Min. Thread Length	4 3/4"
Washer OD	1 3/4"
Nut Width	1 5/16"
Drill Bit Size	7/8"
Drill Bit Decimal Size	0.875"
Equivalent	
Min. Installation Depth	4"
Strength, lbs.	
Pull-Out	3,068
Shear	2,925
Tested In	4,000 psi Concrete
Required Installation Torque	175 ft.-lbs.
Thread	
Direction	Right Hand
Type	UNC
Spacing	Coarse
Specifications Met	ICC Listed for Cracked Concrete
For Use In	Concrete
Includes	Hex Nut, Washer
Removable	Permanent
Anchor Type	Stud
System of Measurement	Inch
RoHS	Not Compliant
REACH	REACH (EC 1907/2006) (07/08/2021, 219 SVHC) Compliant
DFARS	Specialty Metals COTS-Exempt
Country of Origin	Peoples Republic of China
Schedule B	731815.5000
ECCN	EAR99

Also known as wedge anchors, the base expands as you tighten the nut for a secure hold in concrete. They're often used to anchor machinery. Pull-out strength and shear strength values are 25% of the ultimate values.

Zinc-plated and zinc yellow-chromate plated steel anchors are corrosion resistant in wet environments.

ICC listed anchors are often required for new construction. Anchors listed for cracked concrete are often required in environments which may cause concrete to crack during the life of the anchor.



(b) (4)

PART NUMBER **91578A224**
Steel Stud Anchor
for Concrete

The information in this 3-D model is provided for reference only.

(b) (4)

Low-Carbon Steel Sheet

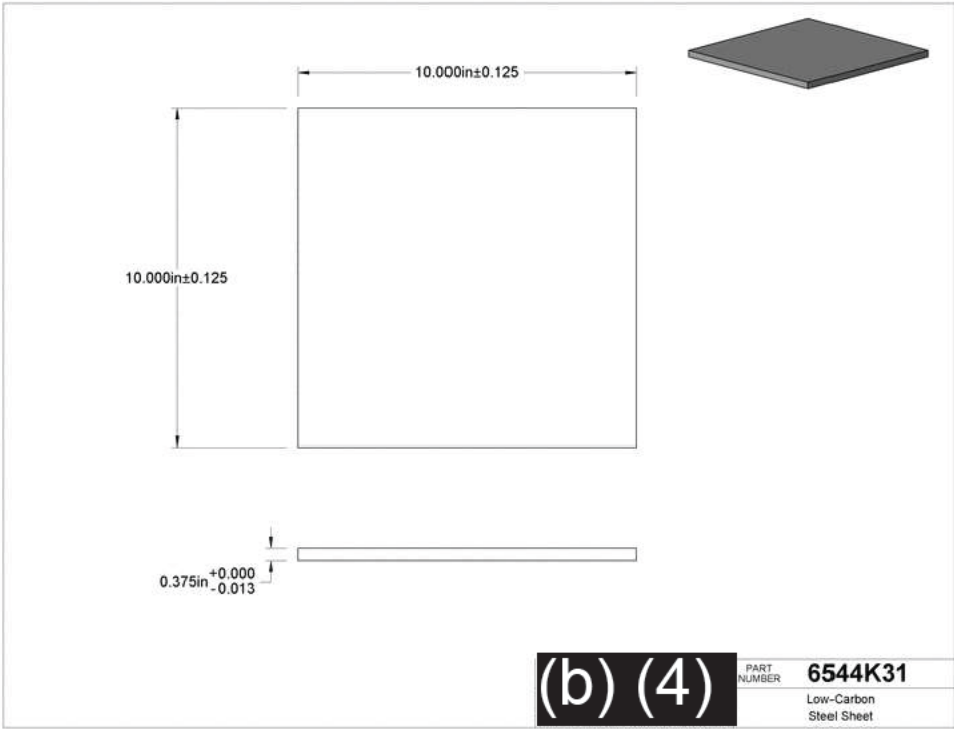
10" x 10" x 3/8"

(b) (4), (b) (5) Each
0544K31



Material	Low-Carbon Steel
Low-Carbon Steel Grade	1006-1026
Shape	Sheet and Bar
Shape Type	Sheets
Thickness	3/8"
Thickness Tolerance	-0.013" to 0"
Tolerance Rating	Undersized
Width	10"
Width Tolerance	-1/8" to 1/8"
Length	10"
Length Tolerance	-1/8" to 1/8"
Yield Strength	60,000 psi
Fabrication	Cold Worked
Hardness	Rockwell B80 (Medium)
Maximum Hardness After Heat Treatment	Not Rated
Heat Treatable	Yes
Certificate	Material Certificate with Traceable Lot Number
Appearance	Plain
Temperature Range	Not Rated
Flatness Tolerance	Not Rated
Coefficient of Thermal Expansion	7.1×10^{-6}
Elongation	23%
Material Composition	
Carbon	0.13-0.20%
Manganese	0.30-0.90%
Phosphorus	0.04% Max.
Silicon	0.15-0.30%
Sulfur	0.50% Max.
Iron	Remainder
Warning Message	Physical and mechanical properties are not guaranteed. They are intended only as a basis for comparison and not for design purposes.
Additional Specifications	SDS
RoHS	RoHS 3 (2015/863/EU) Compliant
REACH	REACH (EC 1907/2006) (07/08/2021, 219 SVHC) Compliant
DFARS	Specialty Metals COTS-Exempt
Country of Origin	United States
USMCA Qualifying	No
Schedule B	721123.9000
ECCN	EAR99

Also known as mild steel, low-carbon steel is easy to machine, form, and weld. It's widely fabricated into parts that don't require high strength, such as fixture clamps, mounting plates, and spacers. Some of this material can be surface hardened with heat treating.



The information in this 3-D model is provided for reference only.

(b) (4)

Zinc-Galvanized Low-Carbon Steel 90 Degree Angle

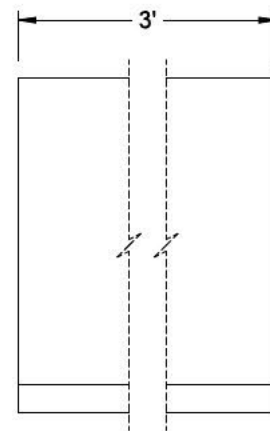
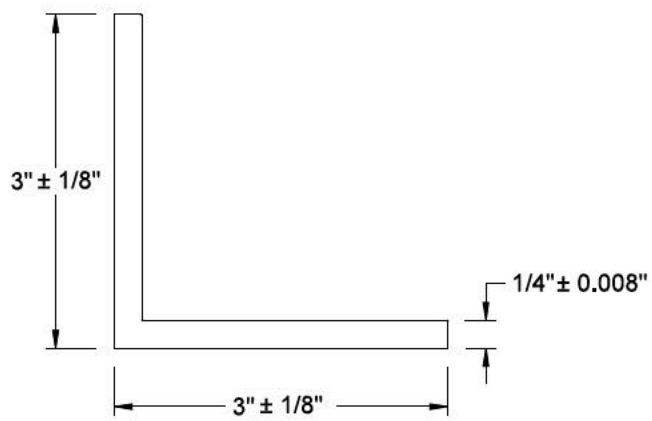
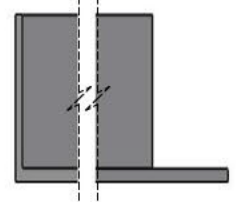
1/4" Wall Thickness, 3" x 3" Outside Size

(b) (5), (b) (4)
Each
8958K64



Material	Low-Carbon Steel
Low-Carbon Steel Grade	A36
Shape	90° Angle
Shape Type	90° Angles
Wall Thickness	1/4"
Wall Thickness Tolerance	-0.008" to 0.008"
Tolerance Rating	Standard
Outside	
Height	3"
Height Tolerance	-1/8" to 1/8"
Width	3"
Width Tolerance	-1/8" to 1/8"
Inside	
Height	2 3/4"
Width	2 3/4"
Yield Strength	36,000 psi
Fabrication	Hot Rolled
Hardness	Rockwell B70
Hardness Rating	Medium
Heat Treatable	No
Certificate	Material Certificate with Traceable Lot Number
Finish	Zinc Galvanized
Appearance	Plain
Temperature Range	Not Rated
Specifications Met	ASTM A36
Corner Shape	
Outside	Square
Inside	Round
Leg Edge Shape	Square
Straightness Tolerance	Not Rated
Elongation	30%
Warning Message	Physical and mechanical properties are not guaranteed. They are intended only as a basis for comparison and not for design purposes.
Length Tolerance	Plus
Length	3 ft.
Additional Specifications	SDS
RoHS	RoHS 3 (2015/863/EU) Compliant
REACH	REACH (EC 1907/2006) (01/17/2022, 223 SVHC) Compliant
DFARS	Specialty Metals COTS-Exempt
Country of Origin	United States
USMCA Qualifying	No
Schedule B	721621.0000
ECCN	EAR99

These 90° angles are zinc galvanized for good corrosion resistance. Also known as mild steel, low-carbon steel is easy to machine, form, and weld. It's widely fabricated into parts that don't require high strength, such as fixture clamps and spacers.



(b) (4)

PART NUMBER **8968K643**

Zinc-Galvanized Low-Carbon
Steel 90 Degree Angle

Information in this drawing is provided for reference only.