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

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	el			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	058	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS (b) (3) (A)	
C	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	
Q	V Engineer	(b) (6)			Phone (b) (6)		Email	(b) (6)	@hdrin	ıc.com
					VALIDATION					
Sou	urce	I	PDF Page N	o.	Facility Geograph	ic Area			Reference	
NDAA		46			Harbor Tunnel		(b) (3) (A)		
Repair I	Description	number o		impacted	t loss of material at a and deformed colum rt.		Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Cor	scription of ntractor QC nod(s) Used				CP. Visual Examinat kets by 3rd party ND		1	ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA lidation and observations	JTF-RH s		QA and 3r	o. d Party QV complete repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			ptance by go		Date: 16 MAY 2023		1			
	Rework	Needed			Photo Record Attached	1	Repair	Work Vali	dated as Cor	mplete
\circ	Yes	lacktriangle	No		See Page 2.		•	Yes	\circ	No
	ort assem				kind" design to mate by	h existing	supports.	VT results,	photo con	nparison
				01/ =::		(h)	(6)			
report was p	tify that repair personal l y sub			QV ENG	INEER SIGNATURE	(D)	(6)			
report is true	.				DATE	06 JUN 2	2023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

(b) (3) (A)

				QUALI	TY VALIDATION (QV) REPO	RT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	059	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}	
C	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6)		Phone (b) (6	\mathbf{S}	Email	(b) (6)	@hdrin	nc.com
					VALIDATION					
Sou	urce	I	PDF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		46			Harbor Tunnel		(b) (3)	(A)		
Repair 1	Description	of location at	ns, modera	ite co l umn F-24 anch	ry little material at any corrosion, complete or to wall (b) (3) (A)	loss of	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Con	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.							ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA lidation and bservations	JTF-RH s JTF-RH (QA and 3r	o. d Party QV complete repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			otance by go	overnment.	Date: 16 MAY 2023					
	Rework Yes	Needed	No		Photo Record Attached	1		Work Vali Yes	dated as Co	
Yes No See Page 2. Yes Comments Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo of new support vs. old support and material data provided for reference.							photo con	No nparison		
					CERTIFICATION					
	tify that repair			QV ENG	INEER SIGNATURE	(b) (e	6)			
report was p report is true	ersonal l y sub e.	estantiated an	d this		DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

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

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	060	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}	
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6)			Phone (b) (6)		Email	(b) (6	@hdrin	ic.com
					VALIDATION					
Sou	ırce	I	PDF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		46			Harbor Tunnel		(b) (3)	(A)		
Repair 1	Description	of location	ns, column	moderate	ry little material at angly corroded, JP-5 and pair/replace support.		Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
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.						_		ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA idation and bservations	JTF-RH s		QA and 3r	o. d Party QV complete repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			ptance by go	overnment.	Date: 16 MAY 2023					
		Needed			Photo Record Attached	l			dated as Co	
Comments	Yes	•	No		See Page 2.		\odot	Yes	0	No
					kind" design to mato ovided for reference.	th existing s	supports.	VT results,	photo con	nparison
	CERTIFICATION									
	tify that repair ersonally sub			QV ENG	INEER SIGNATURE	(b) (6)			
report was p		olaniialeu an	M UIIO		DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	el			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	061	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS. ^{(b) (3) (A)}	
C	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (e	6)		Phone (b) (6)	Email	/b \ //	6)@hdrir	nc.com
		ı			VALIDATION					
Sou	ırce	I	PDF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		46			Harbor Tunnel		(b) (3) (A)	l	
Repair l	Description	of location significan	ns, extreme	e corrosior Iumn flang	ry little material at an n at bottom of column ge section at baseplat ort.	and	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Con	Description of Contractor QC Method(s) Used Methods outlined in detail in QCP. Visual Example Support frames and brackets by 3rd party						1	ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA idation and bservations	JTF-RH s		QA and 3r	e. d Party QV complete I repair & reviewed co		C docume	ntation/ND	E test resu	lts.
		Final accep	ptance by go	vernment.	Date: 16 MAY 2023					
	Rework	Needed			Photo Record Attached	i		Work Vali	dated as Co	mplete
\circ	Yes	•	No		See Page 2.		•	Yes	\circ	No
					kind" design to mato ovided for reference.	ch existing	supports.	VT results,	photo con	nparison
					CERTIFICATION					
	tify that repair ersonal l y sub			QV ENG	INEER SIGNATURE	(b) ((6)			
report was p		olanialeu di	u una		DATE	06 JUN 2	2023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

				QUALI	TY VALIDAT	rion (d	QV) REPO	RT			
]	Red Hill B	ulk Fuel Stora	age Fac	ility Defue	l			
Valid	dation Firm	HDR Env	rironmental	, Operatio	ns and Constr	ruction,	Inc.		Repair No.	062	
	Address	9781 S. N	Meridian Bl	vd., Suite	400, Englewoo	od, CO	80112		Repair ID	PS. ^{(b) (3) (A)}	
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027				Report Date	06 JUN 2	023
Q	V Engineer	(b) (6)		Phone (b	0) (6)		Email	(b) (6)	@hdrin	nc.com
					VALIDAT	TION					
Sou	ırce	I	PDF Page N	o.	Facility G	eographi	ic Area		Location	Reference	
NDAA		46			Harbor Tunne	el		(b) (3	3) (A)		
Repair l	Description	of location baseplate corroded	ns, column	flanges co P-5 attachr hed at (1)		eriorated	at slab,	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Cor	scription of ntractor QC nod(s) Used	Pipe Sup			CP. Visual Ex kets by 3rd pa				ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA idation and bservations	JTF-RH s JTF-RH (QA and 3r	o. d Party QV co I repair & revie			C docume	ntation/ND	E test resu	lts.
		Final accep	ptance by go	vernment.	Date: 16 MAY	2023					
	Rework	Needed			Photo Record A	Attached			Work Valid	dated as Co	mplete
\circ	Yes	•	No		See Page	e 2.		\odot	Yes	\circ	No
slab, base of pipe su Pipe supp	eplate is du pport (atta port assem	ust, JP-5 at chment to bly comple	ttachments tunnel floo etely replac	to wall co r). Repair/ ed with "in	ial at any numl mpleted corro replace suppo kind" design to ovided for refe	oded - no ort." to matc	ot attached	at (1) side	e. API 570:	Corrosion	on base
					CERTIFICA	ATION		()			
		r work validate estantiated an		QV ENG	INEER SIGNAT	TURE	(b)	(6)			
report is true					DATE		06 JUN 2	023			



Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

(b) (3) (A)

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	el			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	063	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}	
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (e	6)		Phone (b) (6)	Email	(b) (6	@hdrin	ic.com
					VALIDATION					
Sou	urce	I	PDF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		46			Harbor Tunnel		(b) (3)	(A)		
Repair 1	Description				ry little material at an air/replace support.	y number	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
							QCP and Reports.	Daily		
Val	otion of QA lidation and bservations	JTF-RH s		QA and 3r	o. d Party QV complete I repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			otance by go	overnment.	Date: 16 MAY 2023	_	l			
	Rework Yes	Needed	No		Photo Record Attached See Page 2.	<u>l</u>	Repair	Work Vali Yes	dated as Co	mplete No
	oort assem	bly comple	etely replac		kind" design to mato	h existing			photo con	
					CERTIFICATION	/ ->-	(0)			
	tify that repair ersonal l y sub			QV ENG	INEER SIGNATURE	(b) ((6)			
report is true					DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

(b) (3) (A)

				QUALI	TY VALIDATION (QV) REPO	RT			
]	Red Hill B	sulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	064	
	Address	9781 S. N	leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}	
C	ontract No.	FA89031	5D0007, D	.O. FA890	03-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6)		Phone (b) (6)	Email	/b \ //	6)@hdrir	ic.com
					VALIDATION					
Son	urce	I	DF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		46			Harbor Tunnel		(b) (3)	(A)		
Repair 1	Description	number o		, grout pac	t loss of material at a		Source	ce Contract Reference	47QSHA1 W912DY2 Service O	1F0025
Description of Contractor QC Method(s) Used Methods outlined in detail in QCP. Visual Examination Pipe Support frames and brackets by 3rd party NDE.								ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA lidation and bservations	JTF-RH s JTF-RH (QA and 3r	e. d Party QV complete I repair & reviewed co		C documer	ntation/ND	E test resu	lts.
		Final accep	otance by go	overnment.	Date: 16 MAY 2023					
	Rework	Needed			Photo Record Attached	l		Work Vali	dated as Co	mplete
Comments	Yes	•	No		See Page 2.		\odot	Yes	\circ	No
Pipe support assembly completely replaced with "in kind" design to match existing supports. VT results, photo comparisor of new support vs. old support and material data provided for reference.							nparison			
					CERTIFICATION	/ -	<u> </u>			
		work validate		QV ENG	INEER SIGNATURE	(D) (6)			
report is true	*		-		DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

(b) (3) (A)

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	065	
	Address	9781 S. N	leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS. ^(b) (3) (A	N)
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	I III II II II 2	023
Q	V Engineer	(b) (6	5)		Phone (b) (6)	Email	(h)	21	nc.com
					VALIDATION					
Sou	urce	P	DF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		45			Harbor Tunnel		(b) (3) (A)		
Repair 1	Description	number of		, column fl	t loss of material at a ange deformed.	ny	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Description of Contractor QC Method(s) Used Methods outlined in detail in QCP. Visual Examina Pipe Support frames and brackets by 3rd party ND							I	ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA lidation and bservations	JTF-RH s JTF-RH C		QA and 3r	e. d Party QV complete I repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			otance by go	vernment.	Date: 16 MAY 2023		<u> </u>			
	Rework	Needed			Photo Record Attached	i			dated as Co	mplete
O	Yes	\odot	No		See Page 2.		•	Yes	\circ	No
	ort assem				kind" design to mato ovided for reference. CERTIFICATION	ch existing	supports.	VT results,	photo con	nparison
I hereby cert	tify that repair	· work validate	ed in this	QV ENG	INEER SIGNATURE	(b) (6)			
	ersonally sub	stantiated an			DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	el			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	066	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}	
C	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6	5)		Phone (b) (6)		Email	(b) (6	@hdrin	nc.com
					VALIDATION					
Sou	ırce	I	PDF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		45			Harbor Tunnel		(b) (3	s) (A)		
Repair 1	Description	number o		, column fl	t loss of material at a ange deformed.	ny	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Description of Contractor QC Method(s) Used Methods outlined in detail in QCP. Visual Examinating Pipe Support frames and brackets by 3rd party NDE						_		ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA idation and bservations	JTF-RH s JTF-RH (QA and 3r	o. d Party QV complete repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			otance by go		Date: 16 MAY 2023		<u> </u>			
		Needed			Photo Record Attached	1			dated as Cor	
					See Page 2. kind" design to mato ovided for reference.	h existing s	supports.	Yes VT results,	photo com	No nparison
	CERTIFICATION									
	ify that repair			QV ENG	INEER SIGNATURE	(b)	(6)			
report was p report is true	ersonal l y sub •.	stantiated an	a tnis		DATE	06 JUN 2	2023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	067	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}	
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6	3)		Phone (b) (6)		Email	(b) (6	@hdrin	nc.com
					VALIDATION					
Sou	ırce	I	PDF Page N	o.	Facility Geograph	ic Area		Location	Reference	
NDAA		45			Harbor Tunnel		(b) (3) (<i>i</i>	4)		
Repair 1	Description	number o		, column fl	t loss of material at a ange deformed.	ny	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Con	scription of ntractor QC nod(s) Used	Pipe Sup			OCP. Visual Examinat kets by 3rd party ND			ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA idation and bservations	JTF-RH s		QA and 3r	o. d Party QV complete repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			ptance by go	overnment.	Date: 16 MAY 2023		Γ			
		Needed			Photo Record Attached	l			dated as Co	
0	Yes	•	No		See Page 2.		•	Yes	\cup	No
					kind" design to mato	ch existing s	supports.	VT results,	photo con	nparison
					CERTIFICATION					
		· work validate		QV ENG	INEER SIGNATURE	(b)	(6)			
report was p		osamateu an	u una		DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

(b) (3) (A)

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	068	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS (b) (3) (A)	
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6)		Phone (b) (6	5)	Email	(b) (6	@hdrir	ic.com
					VALIDATION					
Sou	urce	I	PDF Page N	lo.	Facility Geograph	ic Area		Location	Reference	
NDAA		45			Harbor Tunnel		(b) (3)	(A)		
Repair 1	Description	number o		, column fl	t loss of material at a ange deformed.	ny	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
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.						I	ntractor QC s Reviewed	QCP and Reports.	Daily	
Val	otion of QA lidation and bservations	JTF-RH s		QA and 3r	o. d Party QV complete repair & reviewed co		C docume	ntation/ND	E test resu	lts.
			otance by go		Date: 16 MAY 2023	_				_
	Yes	Needed	No		Photo Record Attached See Page 2.	1	Repair	Yes	dated as Co	mplete No
	oort assem	bly comple	etely replac		kind" design to mato ovided for reference.	h existing s	Ü		photo con	
				OV ENG	INEER SIGNATURE	(b) ((6)			
report was p	tify that repair ersonally sub			QV ENG	INLER SIGNATURE	(0)(0)			
report is true) .				DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

(b) (3) (A)

				QUALI	TY VALIDATION (QV) REPO	ORT			
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Inc.		Repair No.	069	
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS (b) (3) (A)	
C	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6	5)		Phone (D)	(6)	Email	(b) (6)	@hdrir	nc.com
					VALIDATION					
Sor	urce	I	PDF Page N	lo.	Facility Geograph	ic Area		Location	Reference	
NDAA		45			Harbor Tunnel		(b) (3	3) (A)		
Repair :	Description	of location attached wall deter	ns, extrem	e delamina eme deter d detached		umns not	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025
Cor	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.						l	ntractor QC s Reviewed	QCP and Reports.	Daily
Val	otion of QA lidation and observations	JTF-RH s JTF-RH (QV visually	QA and 3r inspected	d Party QV completed I repair & reviewed co		C docume	ntation/ND	E test resu	lts.
	Darrant	Final accept Needed	otance by go	overnment.	Date: 16 MAY 2023 Photo Record Attached	1	Damair	Work Wali	datad as Ca	mmlata
0	Yes	•	No		See Page 2.		(e)	Yes	dated as Co	No
Pipe supp	API 570: Co	bly comple	tely replac	ed with "in	t (attachment to tunned kind" design to mate ovided for reference.	·				nparison
,		work validate		QV ENG	INEER SIGNATURE	(b)	(6)			
report was p report is true	-	estantiated an	d this		DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

(b) (3) (A)

QUALITY VALIDATION (QV) REPORT												
	Red Hill Bulk Fuel Storage Facility Defuel											
Validation Firm HDR Environmental,				, Operatio	ns and Construction,	Repair No.	070					
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}			
C	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023		
Q	V Engineer	(b) (6	3)	Phone (b) (6)			Email	(b) (6	6) @hdrinc.com			
	VALIDATION											
Sou	Source		PDF Page N	o.	Facility Geographic Area			Location Reference				
NDAA		45			Harbor Tunnel		(b) (3	B) (A)				
Repair 1	Description	of location flanges, a	ns, extreme	e corrosior attached a	ry little material at any n at baseplate and co and detached when so	Sour	Source Contract Reference		Comico Ordor C40			
D d					OCP. Visual Examinat kets by 3rd party ND	Contractor QC Records Reviewed						
QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. Description of QA Validation and Observations QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. TF-RH QV visually inspected repair & reviewed contractor QC documentation/NDE test results Observations							lts.					
			otance by go		Date: 16 MAY 2023							
		Needed	.,		Photo Record Attached	l			dated as Co			
Yes No See Page 2. Yes No 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											
	tify that repair			QV ENG	INEER SIGNATURE	(b) ((6)					
report was p report is true	ersonal l y sub •.	sianiiated an	a this		DATE	06 JUN 2	023					

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

QUALITY VALIDATION (QV) REPORT											
	Red Hill Bulk Fuel Storage Facility Defuel Repair										
Validation Firm HDR Environmental,				, Operatio	ns and Construction,	Repair No.	071				
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112			PS ^{(b) (3) (A)}		
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027	Report Date	06 JUN 2	023			
Q	V Engineer	(b) (6)		Phone (b) (6)		Email	(b) (6	nc.com		
	VALIDATION										
Sou	urce	PDF Page No.			Facility Geograph	ic Area		Location Reference			
NDAA		45			Harbor Tunnel		(b) (3	B) (A)			
of locations, wall an Repair Description not attached to base				chor not vi eplate, sev ear plate to	ry little material at any sible, flanges at angle ere delamination at b o support not engage support.	e column aseplate.	Sour	ce Contract Reference	47QSHA1 W912DY2 Service O	21F0025	
					CP. Visual Examinat kets by 3rd party ND		ntractor QC s Reviewed				
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 result Observations							lts.				
			otance by go	overnment.	Date: 16 MAY 2023						
	Yes	Needed	No		Photo Record Attached See Page 2.	1	Repair	Yes	dated as Co	mplete 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		(0)				
	tify that repair ersonal l y sub			QV ENG	INEER SIGNATURE	(b) ((6)				
report is true					DATE	06 JUN 2	023				

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

QUALITY VALIDATION (QV) REPORT												
Validation Firm HDR Environmental, Operations and Construction, Inc. Repair No. 072												
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Repair No.	072					
	Address	9781 S. N	leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS (b) (3) (A)			
C	ontract No.	FA89031	5D0007, D	.O. FA890)3-19-F-0027	Report Date	06 JUN 2	023				
Q	V Engineer	(b) (6)		Phone (b) (6)			Email	(b) (6)@hdrin	ic.com		
	VALIDATION											
Son	urce	I	DF Page N	o.	Facility Geograph	ic Area	Location Reference					
NDAA		45			Harbor Tunnel		(b) (3)	(A)				
Repair	Description	corrosion bottom of (severe) a	over entire both colur	e support on nns and be e, angles	ber of locations, seve complete less of supp oth flanges, delamina to wall severely deter	Sour	ce Contract Reference	47QSHA18D000Y W912DY21F0025 Service Order 648				
Cor	scription of ntractor QC nod(s) Used	Pipe Sup		detail in QCP. Visual Examination of s and brackets by 3rd party NDE.				Contractor QC Report ecords Reviewed		Daily		
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. Observations							lts.					
		•	otance by go	vernment.	Date: 16 MAY 2023		Ι					
		Needed			Photo Record Attached	1		Work Vali	dated as Cor			
Comments	Yes	•	No		See Page 2.		\odot	Yes	\cup	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		(0)					
		r work validate estantiated an		QV ENG	INEER SIGNATURE	(b)	(6)					
report is true	*	out mateur all	- 1110		DATE	06 JUN 2	023					

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

QUALITY VALIDATION (QV) REPORT												
Red Hill Bulk Fuel Storage Facility Defuel Repair												
Validation Firm HDR Environmental,				, Operatio	ns and Construction,	Repair No.	073					
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A})		
С	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023		
Q	V Engineer	(b) (6)		Phone (b) (6)	Email	il (b) (6) @hdrinc.co				
VALIDATION												
Sou	Source PDF Page			No. Facility Geographic Area			Location Reference					
NDAA					Harbor Tunnel		(b) (3	3) (A)				
Repair 1	Description	deteriorat extreme o	ion througl	n bottom fr n of ancho	ber of locations, com ront flange of both co or bolts over back flar support.	Source Contract Reference Reference Service Ord			21F0025			
Cor	scription of ntractor QC nod(s) Used				QCP. Visual Examinat kets by 3rd party ND	Contractor QC Records Reviewed						
QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. 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.							E test resu	lts.				
		Final accep	otance by go	vernment.	Date: 16 MAY 2023		.					
	Rework	Needed			Photo Record Attached	i		Work Vali	dated as Co	mplete		
O	Yes	lacktriangle	No		See Page 2.		•	Yes	\circ	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	11						
	tify that repair ersonal l y sub			QV ENG	INEER SIGNATURE	(b) ((6)					
report was p		olamaleu di	u una		DATE	06 JUN 2	023					

Red Hill Bulk Fuel Storage Facility Defuel

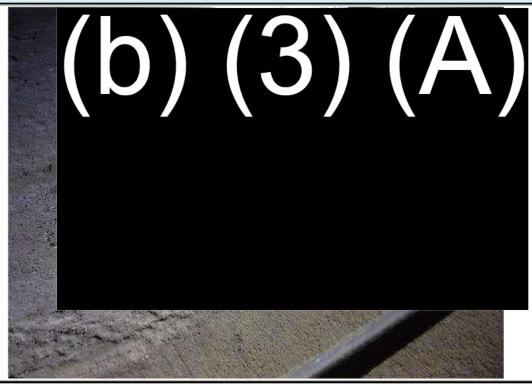
(b) (3) (A)

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

QUALITY VALIDATION (QV) REPORT												
Red Hill Bulk Fuel Storage Facility Defuel												
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Repair No.	074					
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}			
C	ontract No.	FA89031	5D0007, D	.O. FA890	3-19-F-0027			Report Date	06 JUN 2	023		
Q	V Engineer	(b) (6)		Phone (b) (6)		Email	/b \ //	6)@hdrir	nc.com		
VALIDATION												
Sou	urce	I	PDF Page N	o.	Facility Geograph	ic Area		Location	Location Reference			
NDAA	NDAA 45				Harbor Tunnel		Pipe Sup	port 510				
Repair 1	Description		to loss of place supp		rall anchors not visibl	Source Contract Reference 47QSHA18E W912DY21F Service Orde			21F0025			
Con	scription of ntractor QC nod(s) Used	Pipe Sup			OCP. Visual Examinat kets by 3rd party ND			ntractor QC s Reviewed				
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. Observations								lts.				
			ptance by go		Date: 16 MAY 2023		<u> </u>					
		Needed			Photo Record Attached	l		Work Vali	dated as Co			
0	Yes	•	No		See Page 2.		•	Yes	\cup	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		(0)					
	tify that repair ersonal l y sub			QV ENG	INEER SIGNATURE	(b) ((6)					
report is true		-ianada di			DATE	06 JUN 2	023					



Red Hill Bulk Fuel Storage Facility Defuel



Existing condition of pipe pupport a(b) (3) (A)

QUALITY VALIDATION (QV) REPORT										
]	Red Hill B	ulk Fuel Storage Fac	ility Defue	l			
Vali	dation Firm	HDR Env	ironmental	, Operatio	ns and Construction,	Repair No.	075			
	Address 9781 S. Meridian Bl				400, Englewood, CO	80112		Repair ID	PS (b) (3) (A)	
C	ontract No.	FA89031	5D0007, D	.O. FA890	03-19-F-0027			Report Date	06 JUN 2	023
Q	V Engineer	(b) (6)		Phone (b) (6)		Email	/L \ /C	nc.com	
VALIDATION										
Source PDF Page N			o.	Facility Geograph	Location Reference					
NDAA	NDAA 45				Harbor Tunnel		(b) (3)	(A)		
Repair 1	Description	of location		dripping. R	ry little material at an epair/replace support	Source Contract W912DY2 Reference Service O			21F0025	
Description of Contractor QC Method(s) Used							Contractor QC Records Reviewed			
QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. Description of QA Validation and Observations Validation and Observations							lts.			
			ptance by go	overnment.	Date: 16 MAY 2023		Γ			
		Needed			Photo Record Attached	i			dated as Co	
0	Yes	•	No		See Page 2-4		•	Yes	\cup	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	1				
		· work validate estantiated an		QV ENG	INEER SIGNATURE	(p) (6)			
report was p		osamateu an	u una		DATE	06 JUN 2	023			

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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

QUALITY VALIDATION (QV) REPORT													
Red Hill Bulk Fuel Storage Facility Defuel													
Vali	Validation Firm HDR Environmental, Operations and Construction, Inc.								076				
	Address	9781 S. N	/leridian Bl	vd., Suite	400, Englewood, CO	80112		Repair ID	PS ^{(b) (3) (A)}				
C	ontract No.	FA89031	5D0007, D	.O. FA890	03-19-F-0027			Report Date	06 JUN 2	023			
Q	V Engineer	(b) (6)		Phone (b) (6)		Email	(b) (6	nc.com				
VALIDATION													
Source PDF Page No. Facility Geographi						ic Area		Location	Reference				
NDAA		45			Harbor Tunnel		(b) (3	s) (A)					
Repair 1	Description				of support at baseplate and lower replace support. Source Contract Reference Service Of								
Description of Contractor QC Method(s) Used Methods outlined in detail in QCP. Visual Examination Pipe Support frames and brackets by 3rd party NDE.							Contractor QC Records Reviewed						
QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contractor QC docume Observations								ntation/ND	E test resu	lts.			
			otance by go		Repair Work Validated as Complete								
		Needed			Photo Record Attached			dated as Co					
Comments	Yes	•	No		See Page 2-5		•	Yes	0	No			
Pipe supp	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												
		work validate		QV ENG	INEER SIGNATURE	(b)	(6)						
report was p		olamaleu di	u una		DATE	06 JUN 2	2023						

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

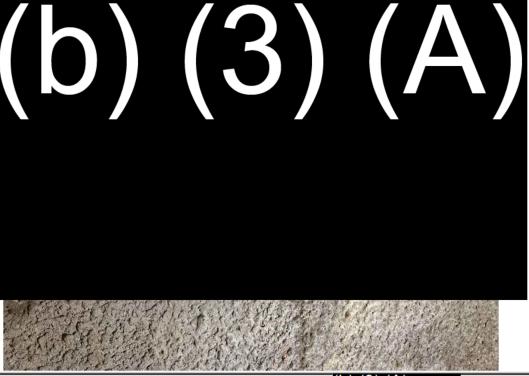
Existing condition prior to pipe support repair at (b) (3) (A)

Red Hill Bulk Fuel Storage Facility Defuel

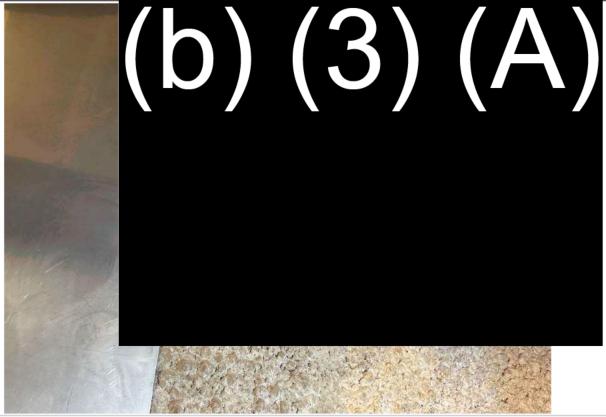
(b) (3) (A)

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

Red Hill Bulk Fuel Storage Facility Defuel



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



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

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													
Vali	dation Firm	HDR Env	ironmenta	, Operatio	ns and Construction,	Inc.		Repair No.	077 PS ^{(b)(3)(A)}				
	Address	9781 S. N	leridian Bl	80112									
C	ontract No.	FA89031	5D0007, D	.O. FA890	03-19-F-0027			Report Date	しいん コロバン	023			
Q	V Engineer	(b) (6	5)		Phone (b) (6	5)	Email	/b \ /C	(b) (6) @hdrind				
VALIDATION													
Sou	urce	P	PDF Page N	lo.	Facility Geograph	ic Area		Location	Reference				
NDAA		45			Harbor Tunnel		(b) (3)	(A)					
Repair 1	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. 47QSHA18D W912DY21F Service Order											
Cor	scription of ntractor QC nod(s) Used	Records Reviewed											
QA methods outlined in QASP. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repair & reviewed contr Observations							C docume	ntation/ND	E test resu	lts.			
Final acceptance by government. Date: 16 MAY 2023							Repair Work Validated as Complete						
\bigcirc	Photo Record Attached Yes No See Page 2.					1	Repair	Yes	dated as Co	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													
hereby cert	I hereby certify that repair work validated in this				INEER SIGNATURE	(b) ((6)						
	ersonally sub	estantiated an			DATE	06 JUN 2							

Red Hill Bulk Fuel Storage Facility Defuel

(b) (3) (A)

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



Visual Testing Report

Report No: MU42123-11 (r	1)						- 1	rojec	t No:	<u> </u>	(HL-F	'ND-	648			P	oject iv	iame:		R	eanii	I на	DOI	Tunne	el Pipe S	support
Part Number:			N/A	١)rawi	ng N	umb	er:	#1									F	Rev:	E
Description of item(s) examin	ned:	Redh	nill T	unne	el Pip	oing (Supp	orts																		
Procedure No: BNDT-PF	R-VT-01						Re	ev:_	1	_	Ар	plica	ble C	ode:	AW	'S D1.1								_ Edi	tion:	2020
Reference NCR No. (If applie	able):	N/A	Α														Examin	ation	Date	e:	Frid	lay, i	Apri	121, 2	023	
		MT	2E.		1	Note: A	All dia	gonally	/ shad	ed are	as bel	ow are	e to be	consi	dered N/	A (Not Ap	olicable)		Mat	eria	le·					
Item Description Ma	ake	Т	Mod		Т	М	T&E	=	Г)ue l	Date	-	em I	Desc	ription	Heat	/Lot/Ba			Cila		ickr	ess		Mat	erial Type
nom Boscipion III	ano		·iou				101			, uo i	Julio				annel	N/A		aton		(6)	(3)	ICINI	1000		CS	onal Typo
					+							+	, uig	10/011	armor	1671				(*)	(0)					
	Tools	: / Gai	une	e H	sed				<u> </u>			t														
Tape Measure Ruler			_					Hi/L	, [1_		╅														
✓ Bridge cam ☐ Taper						dor						_	lote: li	nsner	tion mu	st be do	ne at am	hient	temn	eratu	re	Δn	abic	nt To	mn: 🗆	Yes N
Stud Weld (Only)		-wac [IVIIII		_					ASME)			face				_	IDIC		t Treat	
☐ Pre Production (First										_						elow:						1			PWHT	
☐ Production studs	[□ Dro	opli		[ther				_[After f	PWHT	
				Eva nique	luat		of V		(s) /	Iter		Insp eld Pa		ed (N	т —	dimension Dimension		inche		valuat	ion		_	_		
	1	s)lioui(s	recili	iique		Γ	ciu i y	pes			т"	Ciu F	155			Dimension	is .	(s)				Г	%			
Weld / Item Number	į	8 8	Direct	Remote	Stud	Fillet	PJP	CJP	Slot / Plug	Tack	Root	Inter	Final	Excavation	Specified	Actual	Gap	ation(Relevant	eleva	Accept	Reject	Percent	Rem		enerated NCR olicable)
	3	Welder Stencil(s)	۵	Re	S	ш	ľ	0	Slot	-	œ	_	<u> </u>	Exc	Sp	A	0	*Indication(s)	Rel	Non-Relevant	A	8	٩			
(h) (3) (A)		\rightarrow	Х			Х							Х		1/4	Var					Х			Rep	airs #77,	#76, & #75
(b) (3) (A)	00	039	Х			Х							Х		1/4	Var					Х		r		airs #74, & #69	#73, #72, #71
	00	039	Х			Х							Х		1/4	Var					Х			Repa		#67, #66, #65
	44	456	Х			Х							Х		1/4	Var					Х		l	Rep		#61, #60,
																							l	που,	Q #JU	
																							l			
*Indication Type [[11] Cleanliness, [12]=Tungsten																										
[21]=Linear Indication, [23]																			CISIZE	u wei	u, [19]				vant Indica	
Notes: Multiple fillet welds excee	ded 1/4 ir	nch. Th	his is	acce	eptab	le on	all w	eld ot	her th	an La	ap joir	nts IA	W AV	VS D	1.1.											
//_	\	11		١					ASN	IT VI	T III								N	l/A						
Examined by		Ik						Ī		T Leve		•		۸	4- 11					Name					· ·	NDT Level
Examined by		1,	_						11	21/2:	2		•	ASSIS	sted by:											
		Signati	ture					-		Z I/Z	J	•							Sigr	nature					. —	Date
Form Number: BND	T-FM-VT	Γ-01						İssı	ued f	or Us	se: 1	1-Fe	b-22												F	Page 1 of 1

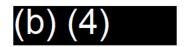
Red Hill Bulk Fuel Storage Facility Defuel

(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)



Steel Stud Anchor for Concrete







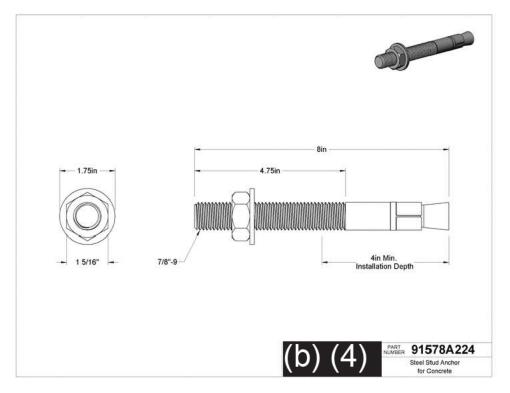


Material	Zinc-Plated Steel
Diameter	7/8"
Length	8°
Thread Size	7/8"-9
Screw Size	7/8 ^u
Min. Thread Length	4 3/4"
Washer OD	1 3/4"
Nut Width	1 5/16"
Drill Bit Size	7/8"
Drill Bit Decimal Size Equivalent	0.875"
Min. Installation Depth	4"
Strength, lbs. Pull-Out Shear	3,068 2,925
Tested In	4,000 psi Concrete
Required Installation Torque	175 ftlbs.
Thread	17010-1031
Direction	Right Hand
Туре	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

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.



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



Low-Carbon Steel Sheet

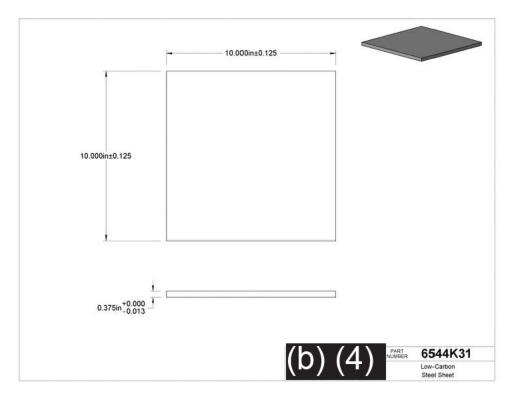
10" x 10" x 3/8"





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.



Zinc-Galvanized Low-Carbon Steel 90 Degree Angle

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





anape	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
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DFARS

ECCN

Country of Origin

USMCA Qualifying Schedule B

Material

Shape

Low-Carbon Steel Grade

Low-Carbon Steel

A36

90° Angle

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.

Specialty Metals COTS-Exempt

United States

721621.0000

EAR99

