

# **Appendix 16**

## **Drainage Facilities**

## Existing Drainage Facilities

The proposed improvements to the I-215/Lake Mead Parkway, I-515 and the I-215/I-515 interchange will result in additional travel lanes, changes in shoulder width, relocation of existing shoulder and barrier rail, new HOV lanes and realignment of on- and off-ramps and flyovers. These improvements will require modifications to existing drainage facilities along the project corridor.

These drainage facilities include Clark County Regional Flood Control District (CCRFCD) Master Plan facilities, onsite and local facilities. The general impact to drainage facilities includes relocation of drop inlets and storm drain; extending/shortening storm drain laterals; relocating storm drain systems and channels.

The facilities and impacts to them from Option 1 and Option 2 are summarized in **Table 1, Summary of Existing Drainage Facilities and Impacts from Alternatives**.

The project is located on FEMA Flood Insurance Rate Map (FIRM) panels 2595, 2583 and 2615. The panels show that the majority of the project lies within Zone X defined by FEMA as areas determined to be outside the 0.2% annual change floodplain. The project from Valley Auto Drive to Galleria Drive lies within Shaded Zone X, defined by FEMA as areas of 0.2% annual change flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

Portions of the project lie within a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. Zone A is a SFHA for which no base flood elevations have been determined. Zone A lies within the following locations:

- Crossing I-215 west of Stephanie Street, contained in stormdrain (CCRFCD facility PTMR 0050)
- Crossing I-215 east of Stephanie Street, contained in culvert (CCRFCD facility PTST 0051)
- Crossing I-215 west of Gibson Road, contained in stormdrain (CCRFCD facility PTRE 0174)
- Crossing I-215 east of Gibson Road, contained in structure (CCRFCD facility PTHR 0049)
- Crossing I-515 south of the I-215/I-515 interchange and Lake Mead Parkway east of the I-215/I-515 interchange
- Along the north side of Lake Mead Parkway from the I-215/I-515 interchange to beyond Eastgate Road, contained in structure
- Along the east side of the I-515 from the I-215/I515 interchange to Auto Show Drive.
- Crossing the I-515 at the UPRR Henderson Spur north of the I-215/I-515 interchange, contained within channel (CCRFCD facility PTHR 0000)

It will be required to demonstrate that project improvements do not cause any adverse drainage impacts within these areas.

Table 1 - Summary of Existing Drainage Facilities and Impacts from Alternatives

ID#	CCRFCD	Local/ Onsite	Facility Name and Description	Location	Approximate Station	Impacted By		Approx Length	Impact – Alt 1	Impact – Alt 3	
						Opt 1	Opt 2				
<b>I-215 and Lake Mead Parkway: Stephanie Street to Van Wagenen Street</b>											
1	x		Pittman MacDonald Ranch - PTMR PTMR 0050, 6: 12' X 6' RCB	West of Stephanie interchange, crossing I-215	"P"	121+30			None	None	
2	x		Pittman Stephanie - PTST PTST 0051, 2: 12' X 6' RCB	East of Stephanie interchange, crossing I-215	"P"	96+92		330	None	None	
3	x		Pittman Railroad East - PTRE PTRE 0174, 14' X 8' RCBC @ 215	West of Gibson interchange, crossing I-215	"P"	60+35	x	x	648	36" lateral connection at "P" 60+42 may need to be abandoned and new lateral and drop inlet connection established.	36" lateral connection at "P" 60+42 may need to be abandoned and new lateral and drop inlet connection established.
4	x		PTRE 0187, Concrete Channel 20'W 4.5'D 2:1 SS, ties into PTRE 0174	West of Gibson interchange	"P"	60+62	x	x	668	Sound wall may be moved and would encroach on channel	Sound wall may be moved and would encroach on channel
5	x		Pittman Horizon Ridge - PTHR PTHR 0049, 12' X 5' RCB	East of Gibson interchange, crossing I-215	"P"	38+55	x	x	300	Remove and relocate drop inlets and laterals connected to the RCB. Remove/relocate drop inlet on top of box at 38+50.	Remove and relocate drop inlets and laterals connected to the RCB. Remove/relocate drop inlet on top of box at 38+50.
6	x		Pittman Wash-Interstate - PTIS PTIS 0015, 20' X 7' RCBC and 2: 10' X 7' RCBC @ 515	East of the I-515/I-215 interchange, crossing Lake Mead Parkway	"LMP"	1100+47			301	None	None
7		x	36" to 54" stormdrain with drop inlets and 18" to 24" laterals	Stormdrain system on the WB side of the I-215, connects to PTMR 0050	"P"	120+76 to 107+41	x	x		Relocate drop inlet at 107+41 outside of new barrier rail. Adjust SDMHs at 107+41 and 111+42 to new shoulder elevation.	Relocate drop inlet at 107+41 outside of new barrier rail. Adjust SDMHs at 107+41 and 111+42 to new shoulder elevation.
8		x	36" stormdrain with drop inlets and	Stormdrain system on the EB side of I-215, connects to PTMR 0050	"P"	121+12 to 109+30				None	None
9		x	18" stormdrain and drop inlets	Stormdrain crossing I-215	"P"	115+27				None	None
10		x	Drop inlets and 18" to 30" stormdrain	East of Stephanie, drop inlets on the north and south side of the I-215, connected by 18" to 30" stormdrain that crosses under I-215	"P"	107+36	x	x		Extend stormdrain on the WB side, relocate drop inlet (see #7) on WB side to be outside of new barrier rail.	Extend stormdrain on the WB side, relocate drop inlet (see #7) on WB side to be outside of new barrier rail.
11		x	Drop inlets and stormdrain	Drop inlets and stormdrain on the WB off-ramp and EB on-ramp at Stephanie. EB stormdrain connects to PTST 0051	"P"	99+75 to 98+39	x	x		Relocate drop inlets at WB off-ramp and EB on-ramp at Stephanie to align to new barrier rail	Relocate drop inlets at WB off-ramp and EB on-ramp at Stephanie to align to new barrier rail
12		x	18" storm drain	Stormdrain on the WB side of I-215	"P"	83+40 to 78+40	x	x	500	Relocate stormdrain and SDMHs out of new travel lane	Relocate stormdrain and SDMHs out of new travel lane
13		x	36" to 48" CMP	Stormdrain crossing I-215	"P"	78+40	x	x		Extend stormdrain on the EB side.	Extend stormdrain on the EB side.
14		x	Riprap channel	Riprap channel along EB side of I-215	"P"	79+55 to 78+41	x	x		Move riprap channel outside of new barrier rail	Move riprap channel outside of new barrier rail
15		x	36" RCP and drop inlet	Stormdrain and drop inlet on the EB side of I-215, discharges to riprap channel (#14) along the south side of the I-215	"P"	79+55	x	x		Reduce length of 36" RCP to discharge into relocated riprap channel	Reduce length of 36" RCP to discharge into relocated riprap channel
16		x	Drop inlets and stormdrain	Drop inlets and stormdrain along the EB off-ramp at Gibson	"P"	70+98 to 65+66	x	x		Relocate drop inlets along EB off-ramp at Gibson to align with new barrier rail.	Relocate drop inlets along EB off-ramp at Gibson to align with new barrier rail.

ID#	CCRFCD	Local/ Onsite	Facility Name and Description	Location	Approximate Station		Impacted By		Approx Length	Impact – Alt 1	Impact – Alt 3
							Opt 1	Opt 2			
17		x	48" CMP	Stormdrain crossing I-215, connects to PTRE 0174 to the north	"P"	63+61				None	None
18		x	Drop inlet	North side of I-215 west of Gibson Drive	"P"	63+87	x	x		Relocate drop inlet	Relocate drop inlet
19		x	48" RCP to 60"X38" HERCP and drop inlets and lateral connections	Between EB I-215 and EB off-ramp, crossing Gibson, connects to PTRE 0174	"P"	60+19 to 54+75	x	x	540	Stormdrain location may be okay, however relocate drop inlets and laterals on the I-215 to align with new barrier rail. Drop inlet connections along Gibson Road do not need relocation.	Stormdrain location may be okay, however relocate drop inlets and laterals on the I-215 to align with new barrier rail. Drop inlet connections along Gibson Road do not need relocation.
20		x	Drop inlet and 36" RCP lateral connection	EB I-215 west of the I-215/I-515 interchange, connects to PTRE 0174	"P"	60+42	x	x		Relocate drop inlet, abandon 36" lateral connection and provide new connection to PTRE 0174.	Relocate drop inlet, abandon 36" lateral connection and provide new connection to PTRE 0174.
21		x	Drop inlets, stormdrain and stormdrain laterals	WB side of I-215, some of the inlets connect to PTHR 0049, some discharge to the north in a roadside swale	"P"	43+39 to 38+50	x	x		Relocate drop inlets to align with new barrier rail. Remove drop inlet at 38+50 on top of PTHR 0049.	Relocate drop inlets to align with new barrier rail. Remove drop inlet at 38+50 on top of PTHR 0049.
22		x	Drop inlets and 18" stormdrain	East bound side of I-215 in the shoulder, stormdrain connects to PTHR 0049	"P"	43+41 to 38+48	x	x		Relocate drop inlets to align with new barrier rail, 18" lateral connection to PTHR 0049 may be okay to protect-in-place.	Relocate drop inlets to align with new barrier rail, 18" lateral connection to PTHR 0049 may be okay to protect-in-place.
23		x	30" RCP	Stormdrain crossing I-215, West of I-215/I-515 interchange	"P"	29+70	x	x		Extend stormdrain on the EB side. The stormdrain has a limited area where it can be extended, a swale will need to be graded between the freeway and existing access road.	Extend stormdrain on the EB side. The stormdrain has a limited area where it can be extended, a swale will need to be graded between the freeway and existing access road.
24		x	Drop inlets, 18" CMP stormdrain and stormdrain laterals	EB I-215 to NB I-515 ramp	"P"	29+41 to 28+12	x	x		Relocate drop inlets and stormdrain laterals. Extend 18" CMP stormdrain on EB side. The stormdrain has a limited area where it can be extended, a swale will need to be graded between the freeway and existing access road.	Relocate drop inlets and stormdrain laterals. Extend 18" CMP stormdrain on EB side. The stormdrain has a limited area where it can be extended, a swale will need to be graded between the freeway and existing access road.
25		x	18" CMP and drop inlet	Drop inlet in EB I-215 to Lake Mead, stormdrain crossing EB I-215 to I-515	"P"	24+17	x	x		Relocate drop inlet. Extend 18" CMP stormdrain on EB side. The stormdrain has a limited area where it can be extended, a swale will need to be graded between the freeway and existing access road.	Relocate drop inlet. Extend 18" CMP stormdrain on EB side. The stormdrain has a limited area where it can be extended, a swale will need to be graded between the freeway and existing access road.
26		x	18" stormdrain and drop inlets	Crossing I-215	"P"	20+85 to 18+42	x	x		Relocate drop inlets to align with new barrier rail.	Relocate drop inlets to align with new barrier rail.
27		x	Triple 18" stormdrain	Stormdrain crossing Lake Mead Parkway east of the I-215/I515 interchange	"LMP"	1098+38		x	2000	None	Extend stormdrain to the north.
28		x	6' X 4' RCB with drop inlets	RCB parallel to the I-515 SE ramp, through the I-215/I-515 interchange, connects to PTIS 0015 to the east	"P" "LMP"	16+66 to 1100+69		x	2700	It seems that the outlet and the RCB does not need to be moved for Alt 1.	RCB connection to PTIS 0015 not impacted. Inlet to RCB needs to be relocated. Remove/relocate drop inlets on top of the RCB to inside new barrier rail.
29		x	18" to 36" stormdrain and drop inlets	Connecting to the 6'X4' RCB (#28), and PTIS 0015, and some discharge to gore areas within the interchange	"P" "LMP"	16+67 to 1099+81	x	x		Relocate drop inlets to align with new barrier rail. Adjust lateral connections and extend stormdrain.	Relocate drop inlets to align with new barrier rail. Adjust lateral connections and extend stormdrain.
30		x	Drop inlet and 8" RCP lateral	North side of I-215 WB within the I-215/I-515 interchange	"P"	13+92	x	x		Relocate drop inlet and lateral	Relocate drop inlet and lateral

ID#	CCRFCD	Local/ Onsite	Facility Name and Description	Location	Approximate Station		Impacted By		Approx Length	Impact – Alt 1	Impact – Alt 3
							Opt 1	Opt 2			
31		x	Drop inlet and lateral	South side of I-215 WB within the I-215/I-515 interchange	"P"	16+67	x	x		Relocate drop inlet and lateral	Relocate drop inlet and lateral
<b>I-515: Horizon Drive to I-215/I-151 Interchange</b>											
32	x		Pittman West Horizon - PTWH PTWH 0000, 8' X 8' RCAP	West side of SB off-ramp at Horizon Dr	"L"	269+50			1520	None	None
33	x		PTIS 0197, 3: 60" RCPC @ Horizon Ridge Parkway	West side of SB off-ramp at Horizon Dr	"L"	266+68			150	None	None
34	x		PTIS 0191, Concrete Channel 9'W 4'D 3:1 SS	West side of SB off-ramp at Horizon Dr	"L"	267+42 to 270+36			425	None	None
35	x		PTIS 0184, Concrete Channel 9'W 4'D 3:1 SS	West side of SB off-ramp north of Horizon Dr	"L"	270+36 to 274+36			425	None	None
36	x		PTIS 0166, 2: 6' X 6' RCB	West side of SB off-ramp north of Horizon Dr	"L"	274+36 to 283+95	x	x	950	At 278+11 roadway widened and is on top of portion of RCB. Check structural integrity of RCB, can it withstand additional weight.	At 278+11 roadway widened and is on top of portion of RCB. Check structural integrity of RCB, can it withstand additional weight.
37	x		PTIS 0102, Riprap Channel 35'W 6'D 2:1 SS	West side of I-515 north of Horizon Dr	"L"	286+14 to 317+79	x	x	3390	Relocate channel. New barrier rail impacts LT channel bank from station 286+74 to 317+79. Moving channel to the west will impact the existing gas lines on the west side of the channel.	Relocate channel. New barrier rail impacts LT channel bank from station 286+74 to 317+79. Moving channel to the west will impact the existing gas lines on the west side of the channel.
38	x		PTIS 0087, Concrete Channel 35'W 6'D 2:1 SS	West side of I-515 north of Horizon Dr	"L"	317+79 to 325+74	x	x	800	New barrier rail is very close to LT channel bank and may require reconstruction of the side slope.	New barrier rail is very close to LT channel bank and may require reconstruction of the side slope.
39	x		PTIS 0068, Riprap Channel 35'W 6'D 2:1 SS	West side of I-515 north of Horizon Dr	"L"	325+74 to 335+82	x	x	1000	Relocate channel. New barrier rail impacts LT channel bank from station 325+74 to 334+88. Moving channel to the west will impact the existing gas lines on the west side of the channel.	Relocate channel. New barrier rail impacts LT channel bank from station 325+74 to 335+82. Moving channel to the west will impact the existing gas lines on the west side of the channel.
40	x		PTIS 0056, Concrete Channel 30'W 5'D 2:1 SS	West side of I-515 south of the UPRR crossing	"L"	335+82 to 342+29	x	x	650	New barrier rail is very close to LT channel bank from station 335+82 to 339+09 and may require reconstruction of the side slope.	New barrier rail impacts LT channel bank from station 335+82 to 339+09. Reconfigure channel (e.g. rectangular channel on LT side) or relocate. Moving channel to the west will impact the existing gas lines on the west side of the channel.
41	x		PTIS 0055, 2: 7' X 7' RCB @ UPRR	West side of I-515, near UPRR crossing	"L"	342+29 to 352+22			1000	None	None
42	x		PTIS 0050, Concrete Channel 16'W 5'D 2:1 SS	West side of I-515, north of UPRR crossing	"L"	352+22 to 356+17			390	None	None

ID#	CCRFCD	Local/ Onsite	Facility Name and Description	Location	Approximate Station		Impacted By		Approx Length	Impact – Alt 1	Impact – Alt 3
							Opt 1	Opt 2			
43	x		PTIS 0037, Bank Stabilized Channel 40'-65'W 5'D 2:1 SS with GDS	West side of I-515, south of I-215/I-515 interchange	"L"	356+17 to 363+16		x	700	None	Relocate channel. New barrier rail impacts LT channel bank at 363+16. Moving channel to the west will impact the existing gas lines on the west side of the channel.
44	x		PTIS 0029, Concrete Channel 40'W 5'D 2:1 SS	West side of I-515, south of I-215/I-515 interchange	"L"	363+17 to 366+57		x	360	None	Relocate channel. New barrier rail impacts the channel. Moving channel to the west will impact the existing gas lines on the west side of the channel.
45	x		Pioneer Detention Basin - PTPD PTPD 0000, Proposed Concrete Channel, 12'W 4.5'D 2:1 SS	West side of I-515, south of the I-215/I-515 interchange, connects to PTIS 0028	"L"	366+57		x	510	None	The confluence structure design of this facility with PTIS 0029 and PTIS 0028 will need to be evaluated.
46	x		Pittman Railroad - PTRR PTRR 0027, 10' X 7' RCB	East side of I-515, at the UPRR	"L"	345+36 to 348+32			960	None	None
47	x		PTRR 0016, Concrete Channel 14'W 6'D 0:1 SS	East side of I-515, north of the UPRR	"L"	348+32 to 354+63			626	None	None
48	x		PTRR 0000, 10' X 7' RCB	East side of I-515, south of I-215/I-515 interchange. Connects to PTIS 0015	"L"	354+63 to 371+55		x	1484	None	Relocate drop inlets and extend lateral connections to RCB between station "L" 362+71 and "L" 363+65.
49	x		PTIS 0028, 3: 10' X 7' RCBC @ 515	Crossing I-515, south of the I-215/I-515 interchange	"L"	367+23		x	319	None	Extend RCBCs on the west side of I-515 to new channel location (PTIS 0029)
50	x		PTIS 0023, Concrete Channel, 40'W 7'D 2:1 SS	Crossing north to west off-ramp, south of the I-215/I-515 interchange	"L"	367+23			110	This channel does not exist, it's a closed system in this area - None	This channel does not exist, it's a closed system in this area - None
51			Drop inlets and laterals	I-515 from Horizon Drive to the I-215/I-515 interchange	"L"	264+79 to 375+00	x	x		Relocate drop inlets and extend laterals as needed to accommodate roadway improvements.	Relocate drop inlets and extend laterals as needed to accommodate roadway improvements.
52		x	Riprap channel	Between SB I-515 and SB off-ramp to Horizon Drive	"L"	267+91 to 277+24	x	x	1030	Relocate riprap channel outside the new barrier rail	Relocate riprap channel outside the new barrier rail
53		x	Riprap channel	Between SB I-515 and NB on-ramp from Horizon Drive	"L"	267+74 to 280+12	x	x	1340	Minimal impact - reduced channel width at north end of channel.	Minimal impact - reduced channel width at north end of channel.
54		x	Riprap channel	East side of NB on-ramp from Horizon Drive	"L"	267+86 to 288+16	x	x	2150	Relocate portion of riprap channel from station "L" 282+74 to "L" 288+16 outside the new barrier rail.	Relocate portion of riprap channel from station "L" 282+74 to "L" 288+16 outside the new barrier rail.
55			Concrete channel	East side of NB I-515	"L"	288+16 to 290+98	x	x	280	Relocate channel outside the new barrier rail.	Relocate channel outside the new barrier rail.
56			Concrete channel	East side of NB I-515	"L"	291+59 to 345+73			5400	None	None
57		x	Drop inlet and lateral	Crossing SB off-ramp to Horizon Drive, discharges into Riprap Channel (#52)	"L"	273+48	x	x		Reduce length of lateral discharging into Riprap Channel #52	Reduce length of lateral discharging into Riprap Channel #52

ID#	CCRFC	Local/ Onsite	Facility Name and Description	Location	Approximate Station		Impacted By		Approx Length	Impact – Alt 1	Impact – Alt 3
							Opt 1	Opt 2			
58		x	Stormdrain - two culvert crossings, size unknown	Crossing SB off-ramp to Horizon Drive, discharges into Riprap Channel (#52)	"L"	277+38	x	x		Reconfigure inlets and reduce length of stormdrain discharging into Riprap Channel at the outlet.	Reconfigure inlets and reduce length of stormdrain discharging into Riprap Channel at the outlet.
59		x	Drop inlets, 18" RCP and CMP stormdrain and stormdrain laterals	NB and SB side of I-515, drop inlets on the freeway that discharge into CCRFC facilities and roadside swales	"L"	265+00 to 372+00	x	x		Drop inlets will need to be relocated to align with new barrier rail/shoulder	Drop inlets will need to be relocated to align with new barrier rail/shoulder
<b>I-515: I-215/I-151 Interchange to Galleria Drive</b>											
60	x		PTIS 0008, 2: 20' X 7' RCBC @ 515	Crossing Lake Mead Parkway NB on-ramp to I-515, east of the I-215/I-515 interchange	"L"	372+59			203	None	None
61	x		PTIS 0004, Energy Dissipator	North of Lake Mead Parkway NB on-ramp to I-515	"L"	373+35			171	None	None
62	x		PTIS 0003, Concrete Channel 43'W 8'D 0:1 SS	North of Lake Mead Parkway NB on-ramp to I-515	"L"	373+35 to 376+93			301	None	None
63	x		PTIS 0002, Concrete Channel 32'W 8'D 0:1 SS	East side of I-515, north of the I-215/I-515 interchange	"L"	376+93 to 384+37			844	None	None
64	x		PTIS 0001, Concrete Channel 32'W 7.5'D 0:1 SS	East side of I-515, north of the I-215/I-515 interchange	"L"	385+67 to 391+33		x	596	None	New barrier rail impacts fence and access road to PTIS 0001 between 386+46 to 387+44
65	x		PTIS 0000, Concrete Channel 32'-114'W 7'D 3:1 SS	East side of I-515, south of the UPRR Henderson Spur	"L"	391+33 to 396+09			480	None	None
66	x		PTHR 0000, Concrete Channel 15'W 5.5'D 2:1 SS	Crossing I-515 at the UPRR Henderson Spur	"L"	396+34			510	None	None
67	x		Pittman Wash - Van Wagenen - PTVW PTVW 0187, 6 Span Bridge 114'W 7'D @ UPRR	East side of I-515, at the UPRR Henderson Spur	"L"	395+95			45	None	None
68	x		PTVW 0186, Concrete Channel, 114'-137'W 7'-2'D 3:1 SS	East side of I-515, at the UPRR Henderson Spur	"L"	395+95 to 396+74			61	None	None
69	x		PTVW 0185, 377 ac-ft Pioneer Detention Basin	East side of I-515, north of the UPRR Henderson Spur	"L"	396+76 to 420+91	x	x		New barrier rail closer to Detention Basin fence than in existing conditions.	New barrier rail closer to Detention Basin fence than in existing conditions.
70			PTWV 0184, 36,059 cfs PMF Spillway	East side of I-515, north of the UPRR Henderson Spur	"L"	419+53				None	None
71	x		PTVW 0183, 60" RCP outlet	East side of I-515, north of the Pioneer Detention Basin	"L"	418+36 to 421+37			350	None	None
72	x		PTVW 0180, 60" RCP	East side of I-515, north of the Pioneer Detention Basin	"L"	421+37 to 426+39			510	None	None

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							Opt 1	Opt 2			
73	x		PTVW 0163, 72" RCP	East side of I-515, south of Warm Springs Road	"L"	426+39 to 446+69	x	x	2030	The on-ramp on the east side of I-515 is being shifted to the east. This puts the regional facility under the road more in some places. May need to provide a higher class of RCP to withstand the extra load from the roadway. There appears to be one drop inlet on the top of the RCP at 436+72 and this will have to be removed and the drop inlet moved to align with the new edge of pavement or new barrier rail. Additional inlets that appear to discharge into the facility will need to be relocated to align with the new barrier rail.	The on-ramp on the east side of I-515 is being shifted to the east. This puts the regional facility under the road more in some places. May need to provide a higher class of RCP to withstand the extra load from the roadway. There appears to be one drop inlet on the top of the RCP at 436+72 and this will have to be removed and the drop inlet moved to align with the new edge of pavement or new barrier rail. Additional inlets that appear to discharge into the facility will need to be relocated to align with the new barrier rail.
74	x		PTVW 0157, 90" RCP	East side of I-515, south of Warm Springs Road	"L"	446+69 to 449+69	x	x	300	A portion of the facility is under the new roadway where it was not before. May need to provide a higher class of RCP to withstand extra load from the roadway.	A portion of the facility is under the new roadway where it was not before. May need to provide a higher class of RCP to withstand extra load from the roadway.
75	x		Pittman Wash - Gibson - PTGB PTGB 0165, 2: 9' X 6' RCB	Crossing I-515, south of Sunset Road	"L"	476+69	x	x	1270	Widening adds fill to the RCB, check loading on RCB.	Widening adds fill to the RCB, check loading on RCB.
76			Drop inlets and laterals	I-515 from the I-215/I-515 interchange to Galleria Drive	"L"	375+00 to 519+12	x	x		Relocate drop inlets and extend laterals as needed to accommodate roadway improvements.	Relocate drop inlets and extend laterals as needed to accommodate roadway improvements.
77		x	18" to 42" stormdrain and drop inlets	SB side of I-515, connects to PTHR 0000	"L"	379+20 to 396+67	x	x		New ramp over portions of the stormdrain system may require higher class of RCP, drop inlets will need to be relocated	New ramp over portions of the stormdrain system may require higher class of RCP, drop inlets will need to be relocated
78		x	Triple 36" CMP	Crossing I-515, north of the UPRR Henderson Spur	"L"	406+16	x			Extend culvert on west side	None
79		x	10' X 3' Concrete Channel	SB side of I-515, connects to 10' X 4' Concrete Channel (#80)	"L"	414+37 to 423+20			880	None	None
80		x	10' X 4' Concrete Channel	SB side of I-515, connects to Transition Structure (#81)	"L"	423+20 to 438+19	x	x	1480	Google earth indicates that this is an RCB. Widening adds fill to the RCB, check loading on RCB.	Google earth indicates that this is an RCB. Widening adds fill to the RCB, check loading on RCB.
81		x	Transition structure	SB side of I-515, connects to 2: 10' X 5' RCBs (#82)	"L"	438+19 to 438+74			50	None	None
82		x	2: 10' X 5' RCB	SB side of I-515, crossing under I-515 south of Warm Springs Road and connecting to PTVW 0163	"L"	438+74 to 443+75			600	Note, these RCBs appear to connect to PTVW 0163 which is a 90" RCP, verify connection.	Note, these RCBs appear to connect to PTVW 0163 which is a 90" RCP, verify connection.
83		x	53" X 34" HERCP	Connects to 10' X 4' Concrete Channel (#80)	"L"	427+57			100	None	None
84		x	42" RCP	Crossing I-515, south of Warm Springs Road	"L"	448+17	x	x		Relocate drop inlet at east end of RCP and extend RCP	Relocate drop inlet at east end of RCP and extend RCP
85		x	36" CMP	Crossing I-515, south of Warm Springs Road	"L"	464+66	x	x		Extend CMP on WB and EB side	Extend CMP on WB and EB side
86		x	24" stormdrain	Crossing I-515, south of Galleria Drive	"L"	524+94				None	None