

Engineering Report

New Mexico State University
Auxiliary Services Drainage Concerns
Las Cruces, New Mexico

August 2013

PSC Project # 01891613



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PARKHILL SMITH & COOPER

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INTRODUCTION

In May 2013, Al Flores with New Mexico State University (NMSU), authorized a contract between NMSU and Parkhill, Smith & Cooper, Inc. (PSC) for professional engineering services for a drainage improvement study. On May 31, 2013, PSC held a kickoff meeting with Mr. Flores where he provided a list of 22 sites to be included in this report.

The primary objectives for this drainage report focused on the following:

- Evaluate the cause of flooding/water damage at each location;
- Determine proposed solutions to alleviate the drainage problems;
- Develop an opinion of probable cost for each solution at each location; and
- All drainage calculations provided within the report are based on the Runoff Analysis Method, approved in Section 32-103 (B), City of Las Cruces Urban Drainage Criteria.

DRAINAGE CONCERNS AND RECOMMENDATIONS

As part of the kick-off meeting, Mr. Flores provided PSC with a list of locations on campus that had been experiencing flooding, infiltration and ponding. The locations are numbered and reflected on the campus map shown in Figure 1. On June 20, 2013 and July 2, 2013, PSC performed site visits to those locations to determine the source and severity of the drainage problems. The site visit on July 2nd occurred the day after a 0.06-inch rain event. Although the rain event was not significant, it helped in the investigation by providing visuals of ponding locations within the concerned area.

REPORT ARRANGEMENT

The Engineering Report is broken up into 22 sections to coincide with the 22 areas of drainage concern around the campus. Figure 1, located in the front of the report, consists of a campus aerial map and illustrates the location of each area reviewed. Each subsequent section contains:

- A description of the area and drainage problem identified;
- Pictures of each drainage area of concern;
- An aerial plan view of each location, highlighting the boundary of each proposed fix and the location of each photograph;
- A recommendation or proposed solution to alleviate the drainage problem in the respective area; and

Engineer's Opinion of Probable Cost (EOPC) was prepared utilizing unit costs available through the most current edition of the RS Means cost estimating software for our region.



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FIGURE 1

1. Monagle Hall – Northside

As stated above, Monagle Hall is located in the northeast portion of campus between RGH Residence Hall and the Corbett Center. The north side of the building borders a two-lane vertical crowned bike path with curb and gutter, as seen in Figure 1-1. The bike path is bounded by a concrete walkway to the east and Jordan Street to the west. The bike path collects runoff from roof drains on Monagle Hall, the driveway from Lot 19 and from the path itself. Runoff then drains from east to west along the gutter of the bike path, where it outlets to Jordan Road.



Figure 1-1

Ponding at this location occurs on the south side of the bike path near the intersection of the Lot 19 driveway. Due to repaving the path multiple times over existing pavement, the pavement section has been built up where the gutter now acts as a ponding location. The existing pavement in the area looks aged with portions breaking off. The existing curb and gutter look to be in good condition with minimal settlement, providing positive slope towards Jordan Road.

Recommendation

As mentioned previously, the bike path slopes from east to west but due to the buildup of pavement it cannot drain properly. The existing pavement and base course will need to be removed to allow for re-grading and repaving of the bike path. This includes the driveway which intersects with the bike path. The curb and gutter can remain in place due to its good condition. The new recommended bike path would have a reverse crown section, which would provide flow away from the adjacent buildings. This is approximately 570-square yards of new pavement. The proposed pavement section shall be 2-inches of HMAC, 6-inches of flexible base course, 6-inches of sub-grade. The new pavement section will transition to match with existing at Jordan Road. In addition, new curb and gutter shall be placed on the last 155-feet of pavement section to prevent further erosion from occurring and prevent the new pavement from prematurely deteriorating. A layout of project location is shown in Figure 1-2.

Monagle Hall Northside					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	570	\$ 3,420.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	570	\$ 28,500.00
3	Furnish & Install 24" Curb and Gutter	LF	\$ 55.00	310	\$ 17,050.00
				SUBTOTAL:	\$ 48,970.00
				20% Contingency:	\$ 9,794.00
				Total:	\$ 58,764.00

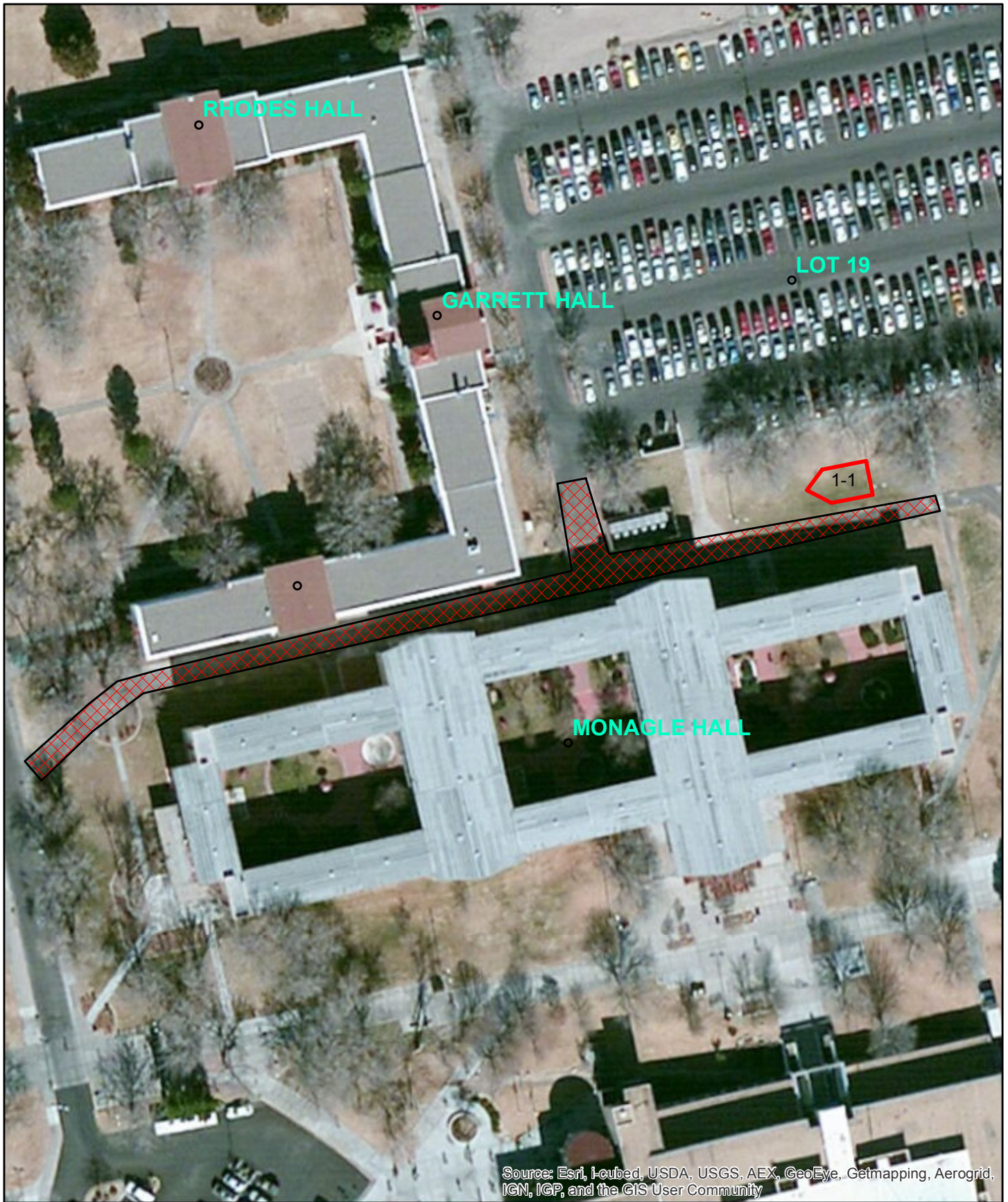


FIGURE 1-2

N



100

Feet

LEGEND



PROPOSED IMPROVEMENTS

2. Memorial Stadium Field House – North and West Drains

Memorial Stadium Field House is located north of Aggie Memorial Stadium and west of the Weight Training Center. The building has entrances on both the north and west side. These two entrances are 6-feet below the adjacent ground elevations. As seen in Figure 2-1, each entrance has a 1-foot diameter inlet grate with a sediment catch basin, connected to a 6-inch drainage pipe. Due to their locations the inlets are subject to a larger inflow of sediment. Upon opening each inlet, the catch basin was full of grass, leaves and sediment, as seen in Figure 2-2. We were unable to determine discharge point of the pipes, although it appeared both pipes were pointed in a northwest direction.



Figure 2-1



Figure 2-2

Based on City of Las Cruces Runoff equations, the north inlet has a drainage area of approximately 900-square feet or 0.02-acres which equals a peak flow rate 0.07-cfs. The west inlet has a drainage area of 1,733-square feet or 0.04-acres, which equals a peak flow rate of 0.13-cfs. Based on comparisons to inlets of the same size and grate opening from the Neenah Foundry website, the existing inlets should have a capacity of 0.2 to 0.3-cfs. Taking into consideration a 50% clogging factor consideration, the inlet and pipes with proper maintenance should be able to handle flows produced by these two drainage areas.

Memorial Stadium Field House Drainage								
	Drainage Area	Drainage Area	Runoff Coefficient	Runoff Coefficient	Flow Coefficient	Peak Flow Rate	Storage Volume	Storage Volume
	Ft ²	Acre	Valley	Mesa		CFS	Ft ³	CY
North	900.00	0.02	-	2.00	1.60	0.07	150.00	5.56
West	1733.00	0.04	-	2.00	1.60	0.13	288.83	10.70

Recommendation

The existing inlet sizes can be increased to a 15-inch Neenah Foundry model 4370-4 floor grate or approved equal. This will increase the inflow capacity but in turn would increase the sediment inflow. We were unable to determine if the drainage pipes were clogged downstream, which could be a contributing factor. It is more economical to perform regular maintenance to the inlets to ensure the highest capacity is available during different storm events. If flooding occurs with maintenance of the inlets, additional study in the area is needed to determine.



FIGURE 2-3



LEGEND

 PROPOSED IMPROVEMENTS

3. Cervantes Village –Complex B

Cervantes Village B Complex is located in the southern portion of the campus on Stanley Drive near the intersection of Williams Avenue. Complex B forms a perimeter around Lot 79B and uses it to collect and transport rainfall runoff to the center of the lot, where it passes through saw tooth curbs and percolates into the landscaped area.

Ponding at Cervantes Village occurs near the entrances of apartment B-13 and B-14. The entrances to apartments B-13 and B-14 are at the same elevation of the adjacent parking lot if not slightly lower. To comply with building code, the sidewalk which connects to the apartment entrances slopes away from the door in turn creating a low spot between the building and parking lot. This is illustrated in Figures 3-1 and 3-2. Each entrance has a drainage area of approximately 4,000 square-feet or 0.09 acres. Based on the City of Las Cruces Runoff Analysis, each entrance currently receives 0.30-cfs of runoff. Due to the existing higher grades surrounding the building, the drainage area will not drain the water to the designated landscape area/ponding area via surface flow in the neighboring parking lot.



Figure 3-1



Figure 3-2

Recommendation

To alleviate the ponding created at each location would require the addition of an inlet with a minimum capacity of 1-cfs at each low spot, which would allow for a 50% clogging factor and still have the capacity to drain the 0.30-cfs flow in these areas. The inlets would be connected to a 6-inch pipe which would run 10-feet straight to the parking lot and make a 90-degree turn and run 60-feet to the existing landscaped area. The pipe would run at a ½-percent slope to minimize depth of pipe. The inlets will have the capability to drain to a proposed 16'L x 8'W x 8'D French drain system located in the adjacent landscaped area. The landscape area will provide enough distance from the buildings to avoid any potential effect on the building foundations. A layout of inlet and pipe system can be seen in Figure 3-3.

Cervantes Complex B					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Sidewalk	SY	\$ 11.00	16	\$ 176.00
2	Remove Existing Asphalt Pavement	SY	\$ 6.00	80	\$ 480.00
3	Furnish & Install Grate Inlet	EA	\$ 2,000.00	2	\$ 4,000.00
4	Furnish & Install 6-inch HDPE pipe	LF	\$ 35.00	140	\$ 4,900.00
5	Furnish and Install 8'x8'x16' Gravel Drainage Leach Field	CY	\$ 100.00	40	\$ 4,000.00
6	Furnish & Install 2" HMA, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	80	\$ 4,000.00
7	Furnish and Install 4-inch Concrete Sidewalk	SY	\$ 45.00	16	\$ 720.00
SUBTOTAL:					\$ 18,276.00
20% Contingency:					\$ 3,655.20
Total:					\$ 21,931.20



FIGURE 3-3



40

Feet

LEGEND



PROPOSED IMPROVEMENTS

4. Vista Del Monte Apartment Complex – Lot 79W

Lot 79W is located west of the Vista Del Monte Apartment Complex. The lot drains east through its two entrance driveways located off of Williams Avenue. The lot collects runoff from the western half of the apartment complex but mainly collects water from its own lot. The majority of pavement and curb in the lot appears to be in sound condition, with few places needing replacement.

During our site investigation, we were able to identify three ponding locations within Lot 79W. Location No. 1 is near the center of the lot where the pavement and curb for the island have settled, which can be seen in Figure 4-1. Water that has ponded at this location has caused the curb to settle allowing for a larger ponding area along the curb section. Location no. 2 is a curb section that has broken and started to settle surrounding the northern most center islands, which can be seen in Figure 4-2. The settling curb creates multiple locations for water to pond preventing it to flow downstream. Location No. 3, is the corner of the first parking stall, just south of the north entrance, off Williams Street, which is seen in Figure 4-3. The lot was graded to push the water towards the corner of the parking stall which has nowhere for it to exit.



Figure 4-1



Figure 4-2



Figure 4-3

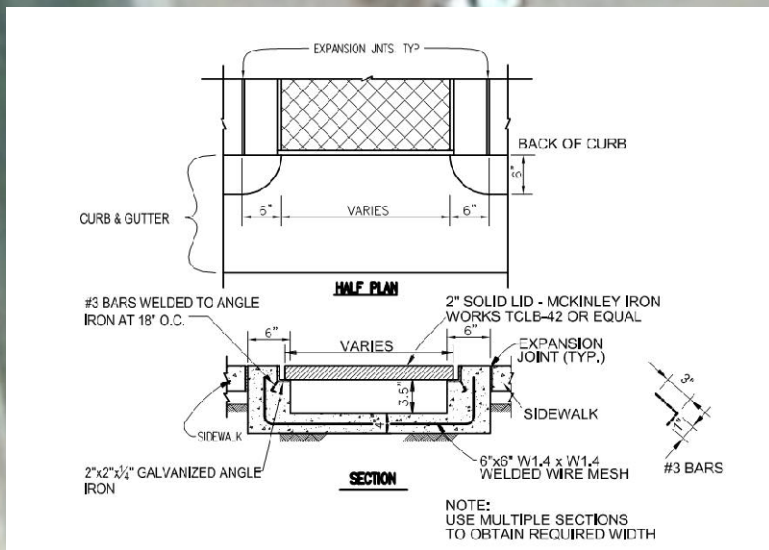
Recommendation

All three areas mentioned above can be easily repaired. Lot 79W provides plenty of east to west slope to provide positive drainage to Williams Avenue. Location No. 1 requires the replacement of approximately 12-feet of curb and a 12x3 foot section of pavement. When the pavement and curb are removed, the contractor will be required to re-grade and re-compact the base course layer to ensure positive slopes along the curb and to prevent settlement from occurring. When this is complete the new curb and pavement can be placed.

Location No. 2 requires the replacement of approximately 25-feet of curb and a 25x3 foot section of pavement. When the pavement and curb are removed, the contractor will be required to re-grade and re-compact the base course layer to ensure positive slopes along the curb and to prevent settlement from occurring. When this is complete the new curb and pavement can be placed.

At location no. 3, water can be drained through the installation of a concrete flume that will flow down the concrete flume and through the sidewalk to Williams Ave. In total the flume would span the length of 15.5-feet and have a drainage channel 1-foot wide by .5-feet deep. A cross section of the proposed flume is provided in Figure 4-4.

Lot 79W Vista Del Monte Apartment Complex					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Curb	SY	\$ 6.50	40	\$ 260.00
2	Remove Existing Asphalt Pavement	SY	\$ 6.00	15	\$ 90.00
3	Remove Existing Sidewalk	SY	\$ 11.00	2	\$ 22.00
4	Furnish & Install 6-inch Curb	LF	\$ 40.00	40	\$ 1,600.00
5	Furnish & Install 2" HMAc, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	15	\$ 750.00
6	Furnish and Install 6-inch Concrete Flume and Steel Plate	EA	\$ 2,000.00	1	\$ 2,000.00
SUBTOTAL:					\$ 4,722.00
20% Contingency:					\$ 944.40
Total:					\$ 5,666.40



LOCATION 3

LOCATION 2

LOCATION 1

WILLIAMS AVE.

VISTA DEL MONTE

LOT 79W

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

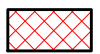
FIGURE 4-4



40

Feet

LEGEND



PROPOSED IMPROVEMENTS



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5. Lot 23 – Garcia Hall

Lot 23 is located north of Garcia Hall with its entrance off Locust St. Lot 23 collects runoff from the concrete walkway of Garcia Hall, from Lot 27 to the east, and from what is collected on the lot itself. The lot drains in a westerly direction where it discharges to Locust Street.

Ponding occurs on the lot near the drop-off area/handicap entrance on the south side of the lot, as shown in Figure 5-1. The existing pavement section has little to no slope on it. The portion of pavement which has minor slope, heads towards the existing curb. Few corrective adjustments can be made in this area due to its connection to an accessible ramp.

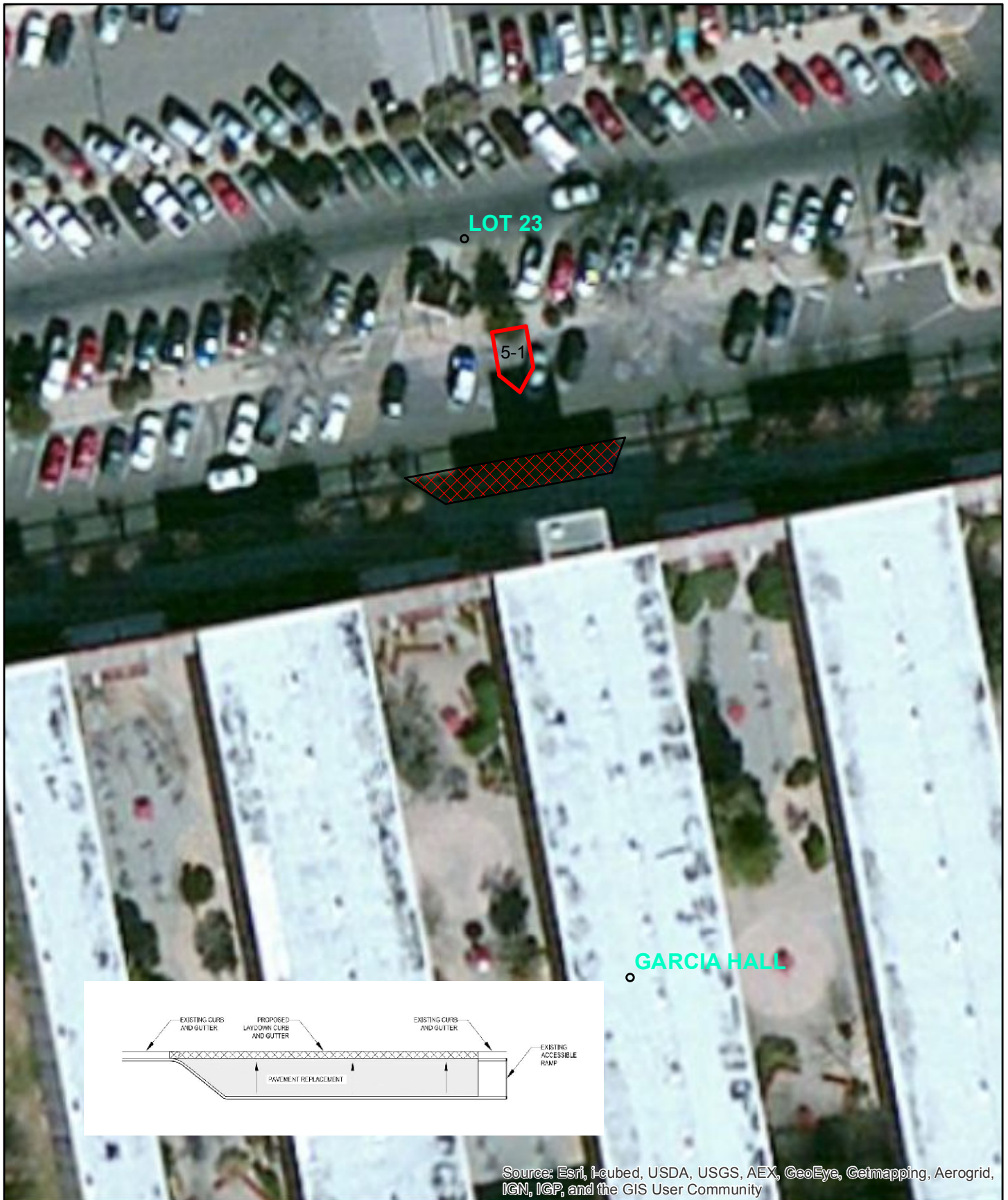


Figure 5-1

Recommendation

To provide positive drainage in this area, we recommend a connection between the two existing gutters with a lay down curb and gutter. The lay down curb and gutter will collect water and transport it west to the existing curb and gutter. In addition the 8'x65' drop off pavement section will need to be removed and replaced. The proposed pavement section shall be 2-inches of HMAC, 6-inches of flexible base course, 6-inches of sub-grade. In total there will be 65-feet of lay down curb and gutter and 58-square yards of pavement replaced.

Lot 23 Garcia Hall					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 5.15	60	\$ 309.00
2	Furnish & Install 24-inch Laydown Curb and Gutter	LF	\$ 45.00	65	\$ 2,925.00
3	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	60	\$ 3,000.00
SUBTOTAL:					\$ 6,234.00
20% Contingency:					\$ 1,246.80
Total:					\$ 7,480.80



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FIGURE 5-2



40

Feet

LEGEND



PROPOSED IMPROVEMENTS

6. Drainage Channel – Pan Am Center

The drainage channel is located west of the Pan Am Center between Lots 33 and 38. The channel begins after the concrete culvert just south of Lot 27 and heads south, where it crosses under Stewart St. and discharges just north of the Weight Training Center. The discharge flows towards the Aggie Soccer Complex. In addition to flow from the western half of the Pan Am Center, the drainage channel collects flow from Lots 27, 29, 33, 38 and 102.

Inspection of the channel shows no significant erosion along the channel. The main erosion concern is located at the outlet of the culvert structure just south of Stewart Street. In Figure 6-1 and 6-2, although it is hard to see through all the vegetative growth, 0.5 to 3-feet of erosion has occurred at the discharge location. The erosion is being assisted from runoff of sprinkler water draining off the side slopes from adjacent grassed areas.



Figure 6-1



Figure 6-2

Recommendation

To prevent future erosion it is recommended that first the outlet be re-graded to 1-foot below the existing culvert outlet elevations. The area to be graded is approximately 25'x35'. When grading is completed a 35-foot long, 9-foot wide and 1-foot deep gabion mattress shall be placed as a preventative measure for future erosion. A layout for the gabion mattress is shown in Figure 6-3.

Drainage Channel Pan Am Center					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Earthwork (Cut & Fill)	CY	\$ 15.00	40	\$ 600.00
2	Furnish & Install 1-foot thick Gabion Mattresses	SY	\$ 99.65	35	\$ 3,487.75
SUBTOTAL:					\$ 4,087.75
20% Contingency:					\$ 817.55
Total:					\$ 4,905.30



FIGURE 6-3



40

Feet

LEGEND



PROPOSED IMPROVEMENTS

7. Lot 59 – Central Plant

Lot 59 is adjacent to the Central Heating Plant and runs along Sweet Avenue and Stewart Street. The lot drains from northeast to southwest, where it is collected by a concrete flume which transports it to dual 12-inch HDPE pipes, as seen in Figure 7-1. Based on site observations, we were unable to determine where the water drained to once it entered the pipes. Inspection of the pipes showed no sediment buildup.



Figure 7-1



Figure 7-2

Approximately 10-feet east of the concrete flume entrance, water begins to pond due to settlement of the pavement section and sediment buildup in the gutter. The ponding extends to the two accessible parking spots. Due to ponding in this section, sediment has built up in the gutter at two locations, as seen in Figure 7-2. The sediment reduces the flow and increases sediment deposit. Sediment buildup on average extended 6 to 8-feet and averages 1.5-inches thick.

Recommendation

To prevent future ponding in this area, it is recommended that a 25'x20' segregated pavement section be removed and replaced. A schematic of the proposed improvements can be seen in Figure 7-3. The section will be located 10-feet east of the concrete flume entrance. In addition, existing gutters will need to be maintained and cleared out on a regular basis. Although the gutters have sufficient slope, sediment buildup will still occur in this area and needs to be maintained.

Lot 59 Central Plant					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 5.15	60	\$ 309.00
2	Furnish & Install 2" HMAc, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	60	\$ 3,000.00
SUBTOTAL:					\$ 3,309.00
20% Contingency:					\$ 661.80
Total:					\$ 3,970.80



FIGURE 7-3



LEGEND

 PROPOSED IMPROVEMENTS



8. Lot 19/Lot 20

Lots 19 and 20 are located in the northeast part of campus. Lot 19 is east of RGH Residence Hall and Lot 20 is south of the Zeta Tau Alpha Sorority House. Entrances for both lots are located off of Locust Street. The majority of the runoff is generated on both lots and drains from east to west.

Lot 20 drains through a dirt field west of the lot before it discharges into Lot 19. As it goes through the dirt lot, runoff causes a lot of erosion and forces sediment into Lot 20. This can be seen in Figure 8-1. Rock riprap had previously been placed where the pavement and dirt lot intersect, all of which now has been eroded and pushed downstream or has been covered in sediment. In addition multiple wheel stops have been pushed down stream to the dirt lot. The erosion effects can be seen in Figure 8-2.



Figure 8-1

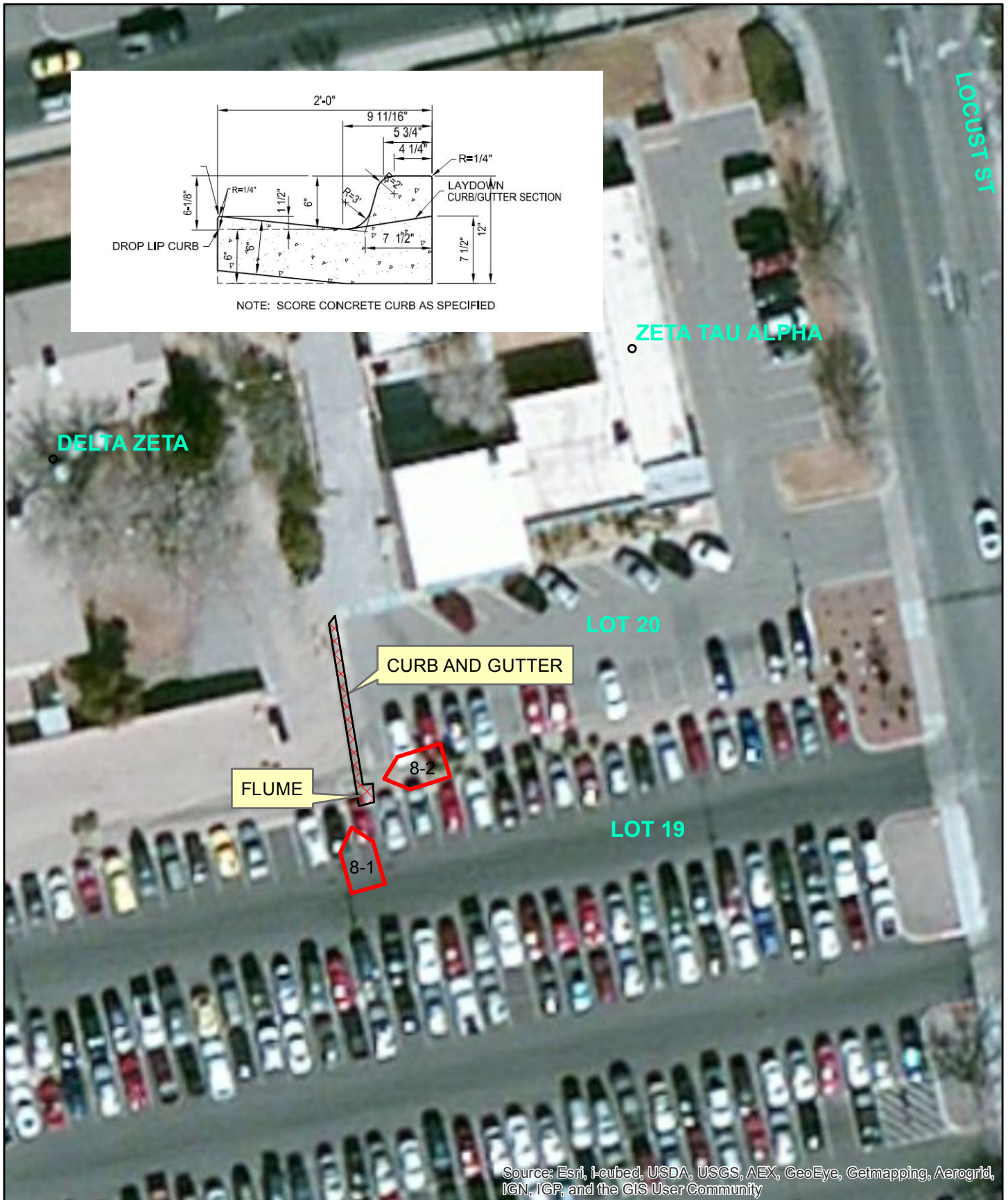


Figure 8-2

Recommendation

In order to prevent further erosion from occurring, PSC recommends that a curb and gutter that connects to a concrete flume be placed on the west border of Lot 20. Water which normally drains through the lot will collect along the curb and gutter, and be directed south through the concrete flume into Lot 19, without collecting sediment from the dirt lot. Once the water hits Lot 19 it will continue to drain downstream through the curb and gutter in Lot 19. To capture all the water, 50-feet of curb and gutter would be required. The concrete flume would measure 7-feet long, 2 feet wide and have a depth of .5-feet. A layout of improvements can be seen in Figure 8-3.

Lot 19 RGH & Lot 20 ZTA					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Concrete Slab	SY	\$ 17.62	12	\$ 211.44
2	Furnish & Install 24-inch Curb and Gutter	LF	\$ 55.00	50	\$ 2,750.00
3	Furnish and Install 6-inch Concrete Flume and Steel Plate	EA	\$ 2,000.00	1	\$ 2,000.00
4	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	12	\$ 600.00
SUBTOTAL:					\$ 5,561.44
20% Contingency:					\$ 1,112.29
Total:					\$ 6,673.73



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FIGURE 8-3



40

Feet

LEGEND

 PROPOSED IMPROVEMENTS



9. Lot 72 – Anderson Hall (PSL)

Lot 72 is located south of the Clinton P. Anderson Physical Science Lab (PSL) and west of Physical Science Laboratory Fabrication Shop. Lot 72 collects runoff from the western portion of the PSL complex and from its own lot. Due to security reasons, we were unable to examine the PSL complex to determine the extent of the drainage area. Runoff from PSL that drains to Lot 72 has caused vegetative overgrowth and erosion. This occurs at four locations throughout the lot. During our recent site visits, maintenance department had recently removed the majority of vegetative growth but erosion flow paths can still be seen as in Figure 9-1.



Figure 9-1

As seen in Figure 10-2, low spots in the landscaping have been created on the PSL complex. These low spots account for 2 of the 4 erosion locations points. The two other locations are caused by air conditioner condensation lines that terminate at the fence line, shown in Figure 10-3.



Figure 9-2



Figure 9-3

Recommendation

To prevent further sediment from entering the PSL complex, upstream erosion can be controlled by the placement of concrete drainage flumes at the north and south drainage locations, which will collect runoff at the fence line and transport flow. The concrete flume would measure 7-feet long, 4-feet wide and have a depth of .5-feet. At the outlet locations where condensation is released, a 7-foot long, 4-foot wide and .5-foot deep riprap mat will be added. There is minimal amount of flow in these areas so it does not constitute the addition of concrete. The width of the concrete flume and riprap mat are based on the average width of each erosion channel. Flume and riprap locations are shown in Figure 9-4.

Lot 72 Anderson Hall					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Curb	LF	\$ 5.93	10	\$ 59.30
2	Furnish & Install 6-inch Layer of Rock Riprap	SY	\$ 33.00	8	\$ 264.00
3	Furnish and Install 6-inch Concrete Flume and Steel Plate	EA	\$ 2,000.00	2	\$ 4,000.00
SUBTOTAL:					\$ 4,323.30
20% Contingency:					\$ 864.66
Total:					\$ 5,187.96



FIGURE 9-4



LEGEND

 PROPOSED IMPROVEMENTS

10. Lot 75 – NMDA

Lot 75 is located northwest of the New Mexico Department of Agriculture (NMDA) building with its entrance off Espina Street. Lot 75 collects runoff from the eastern portion of the NMDA building but mainly collects water from its own lot. It can be seen that the lot was originally graded from southeast to northwest. The runoff drains through the center of the parking lot where it first enters through a 2' x 3' inlet. Runoff which isn't collected at the inlet continues to flow towards the northwest corner of the lot where a drainage flume discharges it to a neighboring empty lot.

Based on observations made during our site visits, existing ponding is caused by two factors. First, is the minimal or no maintenance at the drainage inlet. It seems that since its original installation, the inlet grate has collected soil and has started to produce vegetative growth. As shown in Figure 10-1, the inlet does not perform at its full capacity and runoff passes by and continues down the parking lot. Secondly, when runoff flows to the northwest portion of the parking lot it ponds in multiple locations. These smaller ponding areas are caused by low spots formed from repaving over the existing pavement without proper re-grading of the area to account for any settlement which might have occurred. You can see multiple ponding areas in Figure 10-2. It is difficult to determine how much water reaches the flume, but a large amount of the runoff ponds until it is high enough to be pushed down stream.



Figure 10-1



Figure 10-2

Recommendation

To alleviate ponding in Lot 75, two items need to be addressed. First, the existing drainage inlet needs to be cleared of all existing sediment, so it can assist in the collection of runoff. When comparing the existing inlet grate cover to grates of similar size and slot opening, a clean grate cover has a drainage capacity of 1 to 4 cfs. To collect runoff that passes the grate, a 35x70 foot pavement section will need to be removed, re-graded and replaced. The pavement section is located adjacent to the inlet grate and will run 35-feet east and 70-feet north. The replacement section will be bordered north and west of with curb and gutter. The new pavement section will provide positive slope to the existing curb and gutter, where it will drain west to the drainage flume.

Lot 75 NMAD					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 5.15	275	\$ 1,416.25
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	275	\$ 13,750.00
3	Cleanout Existing Inlet and Pipe	EA	\$ 2,000.00	1	\$ 2,000.00
SUBTOTAL:					\$ 17,166.25
20% Contingency:					\$ 3,433.25
Total:					\$ 20,599.50



FIGURE 10-3



40

Feet

LEGEND



PROPOSED IMPROVEMENTS



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11. Lot 27 – Pan American Center Parking Lot

Lot 27 is located in the northeast corner of campus, east of Pinon Hall and north of the Educational Services Center. Based on GIS campus contours, we determined that half of Lot 27 drains towards the east to Lot 23 while the other half drains south towards a concrete channel and culvert structure which runs under the international mall walkway. In addition to collecting runoff from its own lot, Lot 27 collects runoff from Lot 29 to the east and from the development north of University Ave. The portion of the lot which connects to the concrete culvert has a natural slope which assists with drainage.

Ponding occurs just north of the entrance of the concrete culvert, as shown in Figure 11-1. Based on site observations, a 55x55 foot section of parking lot was replaced and has since experienced more deterioration due to onsite ponding. When the section was repaved, new pavement was placed over existing pavement without re-grading the affected area prior. Settlement of the existing pavement was not accounted for and low spots were created in the section. This can be seen in Figure 11-2. Figure 11-3 shows an aerial plan view of the affected area.



Figure 11-1



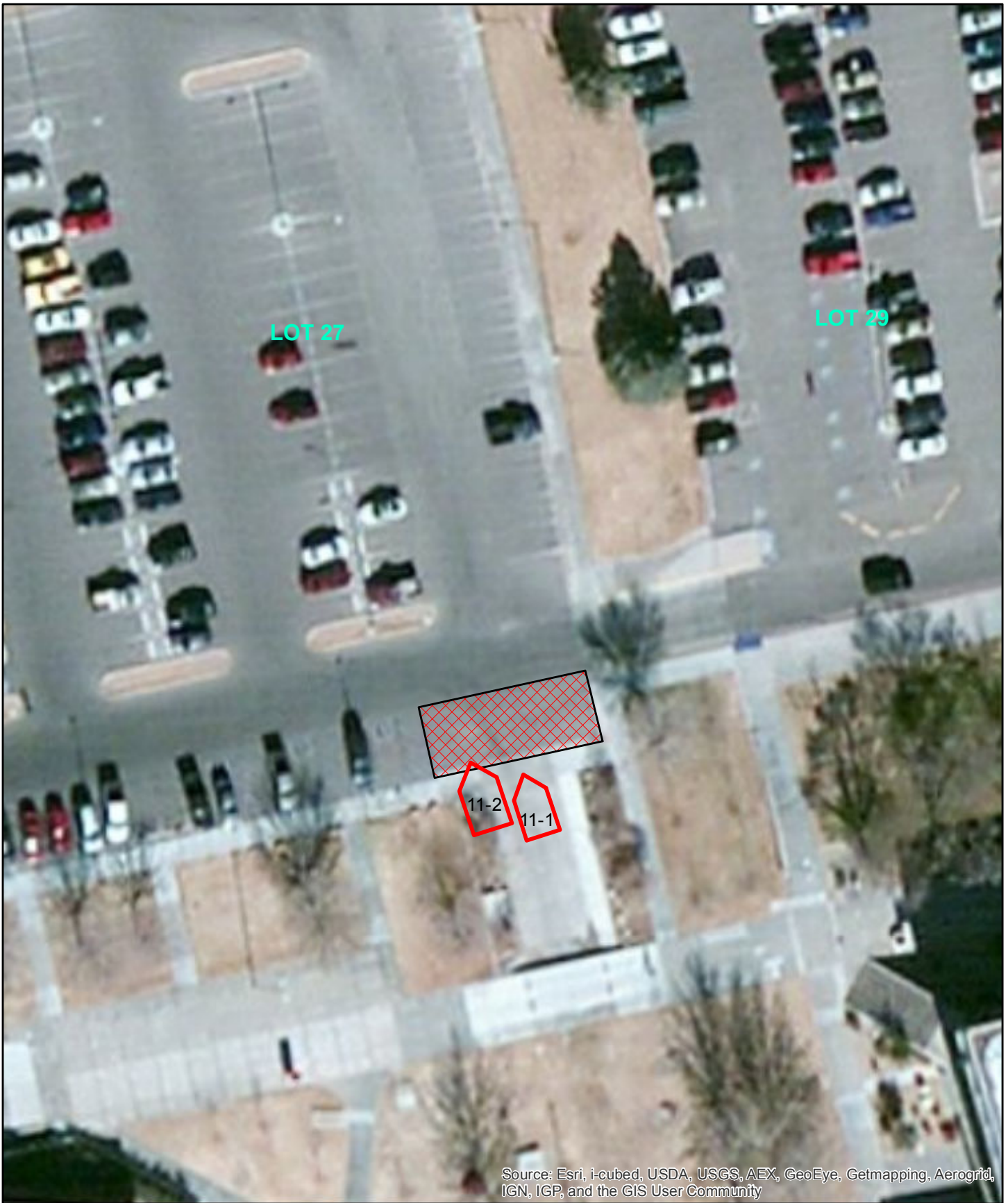
Figure 11-2

New Mexico State University
Auxiliary Services Drainage Concerns
August 2013

Recommendation

To relieve ponding on Lot 27, the existing 55x55 foot pavement section needs to be replaced. The replacement of the section will consist of removing the existing pavement, re-grading the base course and repaving. Due to the positive slope in the neighboring pavement sections, only minor regrading will need to occur to ensure low spots are not created.

Lot 27					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 5.15	340	\$ 1,751.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	340	\$ 17,000.00
				SUBTOTAL:	\$ 18,751.00
				20% Contingency:	\$ 3,750.20
				Total:	\$ 22,501.20



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FIGURE 11-3



40

Feet

LEGEND



PROPOSED IMPROVEMENTS



PARKHILLSMITH&COOPER

12. Lot 64 – Gerald Thomas

Lot 64 is located in the western portion of campus. It is enclosed by Wooton Hall, Gerald Thomas Hall and Knox Hall to the west, north and east respectively. The south side of the lot is bordered by Frenger Street. Runoff is collected from all three neighboring buildings in addition from its own lot. Lot 64 drains from the southeast to northwest and exits to its entrance off of Knox Street.

The entire lot is cracked and deteriorating with visible areas of where multiple repair patches have occurred. Based on our site visit, water ponds at two locations on the lot. The first ponding area is located near the accessible parking space adjacent to Wooton Hall. This ponding area is caused by a pavement repair patch which was placed at a higher elevation than the surrounding pavement, preventing runoff from draining towards Knox Street. The second ponding location is at the southern intersection of Gerald Thomas Hall and Lot 64. This can be seen in Figure 12-1. A wood/steel impact barrier was placed within the gutter to prevent vehicle impact from oncoming traffic. The wooden post placed in the gutter prevents runoff from flowing through unabated. In addition, PSC noticed that multiple layers of pavement have been placed throughout time to where the top of pavement is at a higher elevation than the gutter. To alleviate ponding in Lot 64, three construction options can be completed.



Figure 12-1

Recommendation

Option 1 consists of removing the existing pavement and re-grading, compacting the existing base course, and repaving the entire lot. Based on the existing physical condition of the existing pavement in the lot, the pavement will need to be replaced in the near future, if not continuous cracking and settlement of the pavement will continue to cause many future ponding issues. Due to the positive natural slope in the lot, repaving the area would allow water to drain to Knox St. The total amount of repaving would be 3,800-square yards.

Option 2 consists of removing the existing pavement repair patch and re-grading the area so it matches up with existing pavement. This is a minor fix that will prevent water from ponding behind the accessible parking spots. The proposed pavement patch would measure 20’x9’ or 20-square yards of pavement. This can be done in conjunction with Option 3.

Option 3 consists of removing, re-grading and repaving a 52’x10’ section of pavement south of the vehicle impact barrier. The new pavement section would match existing elevation of the gutter and slope away from the gutter and wooden posts, providing an outlet for water trapped between the wooden posts. Runoff can then flow away from the gutter and runoff will continue to flow northwest towards Knox Street. Option 2 and 3 can be seen in Figure 12-2.

Lot 64 Gerald Thomas - Option 1					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	3,800	\$ 22,800.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 45.00	3,800	\$ 171,000.00
SUBTOTAL:					\$ 193,800.00
20% Contingency:					\$ 38,760.00
Total:					\$ 232,560.00

Lot 64 Gerald Thomas - Option 2					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	20	\$ 120.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	20	\$ 1,000.00
SUBTOTAL:					\$ 1,120.00
20% Contingency:					\$ 224.00
Total:					\$ 1,344.00

Lot 64 Gerald Thomas - Option 3					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	58	\$ 348.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	58	\$ 2,900.00
SUBTOTAL:					\$ 3,248.00
20% Contingency:					\$ 649.60
Total:					\$ 3,897.60



FIGURE 12-2

LEGEND

 PROPOSED IMPROVEMENTS



13. Lot 100 – Natatorium

Lot 100 is located west of the Natatorium and north of Rentfrow Gym. Its entrance driveway is located off of Stewart Street. The lot collects runoff from the Satellite Chiller Plant but mainly collects water from its own lot. The runoff looks to drain from southeast to northwest. The existing pavement and curb and gutter seem to be in good condition and provide adequate drainage.

We were only able to identify ponding at one location of the lot near the intersection with Lot 100. As shown in Figure 13-1, settlement of the pavement and gutter is preventing water from draining north out of the parking stalls. Due to being inundated with water, we are unable to report on the condition of the pavement. The settlement of the curb is shown by adjacent settlement of the pedestrian sidewalk.



Figure 13-1

Recommendation

To alleviate the creation of the ponding area would require re-grading the subgrade beneath the pavement and curb and gutter. A 10'x18' section of pavement and 18-feet of curb and gutter (9-feet on each side of the corner section) would need to be removed and replaced. This can be seen in Figure 13-2.

Lot 100 Natatorium					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	20	\$ 120.00
2	Remove Existing Curb and Gutter	LF	\$ 6.50	18	\$ 117.00
3	Furnish & Install 24-inch Curb and Gutter	LF	\$ 55.00	18	\$ 990.00
4	Furnish & Install 2" HMAc, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	20	\$ 1,000.00
SUBTOTAL:					\$ 2,227.00
20% Contingency:					\$ 445.40
Total:					\$ 2,672.40



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FIGURE 13-2



40

Feet

LEGEND



PROPOSED IMPROVEMENTS



14. Lot 74 – NMAD

Lot 74 is located south of the New Mexico Department of Agriculture (NMDA) building off of Gregg Street. Lot 74 collects runoff from the southern portion of the NMDA building but mainly collects water from its own lot and drains south and east towards Gregg St. The existing curb and gutter seems to be in good condition and provides adequate drainage.

The existing pavement in the lot however looks old with many cracks and some settlement occurring in a few locations. This can be seen in Figure 14-1, where settlement has occurred in the pavement near the curb and gutter on the west side of the lot. To alleviate ponding in Lot 74, two construction options can be completed.



Figure 14-1

Recommendation

Option 1 consists of removing the existing pavement, perform minor grading to remove the single low spot seen and repave the entire lot. Due to the positive natural slope in the lot, removing the lot spot would allow water to reach the curb and gutter which drains to Gregg St. Due to the excessive cracking in the existing pavement, repaving of the lot will be required in the near future. The total amount of repaving would be 750-square yards.

Option 2 consists of removing and replacing the 6'x6' pavement section, shown in Figure 14-2, and re-grading it to provide positive drainage slope. This provides an economic solution for the ponding in Lot 74, but due to the condition of the adjacent pavement, settlement may begin to occur in other locations. The opinion of probable cost for Options 1 and 2 are provided in Appendix A.

Lot 74 NMDA - Option 1					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	750	\$ 4,500.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	750	\$ 37,500.00
SUBTOTAL:					\$ 42,000.00
20% Contingency:					\$ 8,400.00
Total:					\$ 50,400.00

Lot 74 NMDA - Option 2					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	9	\$ 54.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	9	\$ 450.00
SUBTOTAL:					\$ 504.00
20% Contingency:					\$ 100.80
Total:					\$ 604.80



FIGURE 14-2



LEGEND

 PROPOSED IMPROVEMENTS

15. Lot 77A and Lot 97 – Academic Research Complex

Lots 77A and 97 are located south of the Academic Research Complex and are bordered by Payne Street to the south and Research Road to the west. The northern portion of Lot 97 drains to the west through Lot 77A, where it outlets to the west and exits Research Road. The southern half of the lot drains towards a 3-foot deep storage pond located in the southwest part of Lot 97.

On average, Lot 97 is 2 to 4-feet higher than Lot 77A. Due to the elevation differences in the area, runoff from Lot 97 tends to cause drainage problems within Lot 77A. As seen in Figure 15-1, runoff from Lot 97 is deteriorating the edge of road pavement and concrete sidewalk located adjacent to the Academic Research building. In addition, sediment is being transported to Lot 77A, as seen in Figure 15-2. In order to prevent this from happening, two construction options can be implemented.



Figure 15-1



Figure 15-2

Recommendation

Option 1 consists of placing a new curb and gutter at the intersection of Lots 77A and 97, which will provide a barrier between the two lots and reduce the amount of sediment transport and pavement deterioration. In total 600-feet of curb and gutter will be added to Lot 77A. In addition, due to the excessive cracking in the pavement, re-pavement of the lot will be needed in the near future.

Option 2 consists of grading/excavating the undeveloped portion of Lot 97, to reduce the steep slopes between lots. With-out more precise survey of the area we are unable to provide an accurate estimate of earthwork quantity. To get a conservative average on earthwork quantities, we calculated a two-foot removal average.

Lot 77A & 97 Academic Reseach Complex - Option 1					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	70	\$ 420.00
2	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	70	\$ 3,500.00
3	Furnish & Install 24-inch Laydown Curb and Gutter	LF	\$ 35.00	600	\$ 21,000.00
SUBTOTAL:					\$ 24,920.00
20% Contingency:					\$ 4,984.00
Total:					\$ 29,904.00

Lot 77A & 97 Academic Reseach Complex - Option 2					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Excavation (2-feet over undeveloped lot)	SY	\$ 2.75	6,000	\$ 16,500.00
SUBTOTAL:					\$ 16,500.00
20% Contingency:					\$ 3,300.00
Total:					\$ 19,800.00



FIGURE 15-3

N



100

Feet

LEGEND



PROPOSED IMPROVEMENTS

16. Lot 48 – Rentfrow Gym

Lot 48 is located north of Rentfrow Gym and is bordered by Williams Avenue to the west and Stewart Street to the north. Lot 48 collects runoff from the northern portion of the Rentfrow Gym building, Lot 100 to the east and runoff generated on its own lot. Runoff also drains from the northeast to southwest at the Williams Avenue driveway.

Ponding occurs in the existing parking stalls adjacent to the building. Based on site observations, the lot has been repaved multiple times without the removal of existing pavement prior to repaving. This has caused the new pavement's finished grade to be higher than the curb and gutter system. This creates a ponding area at the curb and gutter since the water cannot drain, as can be seen in Figure 16-1.



Figure 16-1

Recommendation

To relieve ponding on Lot 48, the pavement of existing parking stalls adjacent to Rentfrow gym need to be removed, regraded and repaved. The two parking sections measure 150'x30' and 55'x30' from west to east respectively. The new pavement sections will be graded to match existing gutter elevations. This will prevent water getting trapped within the gutter. The proposed pavement section shall be 2-inches of HMAC, 6-inches of flexible base course, 6-inches of sub-grade. In addition, a 10-foot section of curb and gutter will need to be replaced, due to uplifting of the curb. The extents of pavement and curb replacement are shown in Figure 16-2. In addition to pavement replacement, the existing gutters need to be cleared out of all existing debris.

Lot 48 Rentfrow Gym					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 6.00	700	\$ 4,200.00
2	Remove Existing Curb and Gutter	LF	\$ 6.50	10	\$ 65.00
3	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 50.00	700	\$ 35,000.00
4	Furnish & Install 24-inch Curb and Gutter	LF	\$ 55.00	10	\$ 550.00
SUBTOTAL:					\$ 39,265.00
20% Contingency:					\$ 7,853.00
Total:					\$ 47,118.00



FIGURE 16-2



LEGEND

 PROPOSED IMPROVEMENTS

17. Lot 83 – Greek Housing/Stadium Area

Lot 83 is located east of the Greek Housing Complex and south of the practice football field. Lot 83 collects runoff from the housing complex, the practice football and runoff generated on the lot itself. Runoff that drains from the practice facility often contains sediment which is left in Lot 83.

During our site visit we were able to determine the drainage flow path, and determined that ponding tends to occur in the middle of the lot. This was determined when we noticed the many areas that showed cracking and deterioration of the pavement, as seen in Figure 17-1. Preliminary elevations points were taken by PSC and they revealed that the lot has an average slope of 0.40% from north to south. Wells Street to the south and the dirt lot to the east have approximately the same elevation as the lot, so changes in the lot elevations must be done minimally to minimize decreasing the existing slope.



Figure 17-1

Recommendation

To assist with drainage of the lot, concrete valley gutters shall be added to both sides of the center parking stalls. The concrete gutters will collect water and help transport it downstream. Concrete swales provide increased transfer of flow in slopes as low as 0.30%. In total 540-feet of gutter would be added to the parking lot. In addition, a sediment swale will be placed 5-feet from the fence line to capture sediment and allow overflow runoff to drain through Lot 83. The layout of the gutters can be seen in Figure 17-2.

Lot 83 Greek Housing/Stadium Area					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Asphalt Pavement	SY	\$ 5.15	180	\$ 927.00
2	Furnish & Install 36" wide Valley Gutter	LF	\$ 60.00	540	\$ 32,400.00
3	Earthwork	SY	\$ 5.00	250	\$ 1,250.00
4	Sodding Sideslope	SF	\$ 0.75	2,100	\$ 1,575.00
SUBTOTAL:					\$ 36,152.00
20% Contingency:					\$ 7,230.40
Total:					\$ 43,382.40



FIGURE 17-2



40

Feet

LEGEND



PROPOSED IMPROVEMENTS

18. Lot 35 – Coaches Building Lot

Lot 35 is located east of the Memorial Stadium Field house and northeast of Aggie Memorial Stadium. Lot 35 sits lower than Stewart and Payne Street which border the lot to the north and east respectively. Lot 35 has a 2-foot perimeter berm on its border, which protects it from receiving runoff from adjacent lots. Runoff drains from northeast to southwest where it exits towards Aggie Memorial Stadium.

The main cause of Lot 35’s problems stem from two items as noticed per our site visit. The elevation difference between Lot 35 and the adjacent lots prevent gravity drainage other than towards the stadium. In addition, since the lot has no vegetative cover and consists mainly of dirt, any drainage structure placed within the lot will eventually be filled with sediment. The drainage area of the lot is approximately 56,250-square feet or 1.29-acres. Based on the City of Las Cruces Runoff Analysis, the area has a peak flow rate of 5.79-cfs and required storage volume of 486.11-cubic yards.

Lot 35 Coaches Building Lot Drainage								
	Drainage Area	Drainage Area	Runoff Coefficient	Runoff Coefficient	Flow Coefficient	Peak Flow Rate	Storage Volume	Storage Volume
	Ft ²	Acre	Valley	Mesa		CFS	Ft ³	CY
Lot 35	56250.00	1.29	2.80	-	1.60	5.79	13125.00	486.11

Recommendation

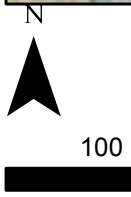
To alleviate erosion and drainage concerns within Lot 35, it is recommended to pave the lot, install a roll curb on the south perimeter, drainage inlets at certain points as seen on Figure 18-1 and drain to an underground storage system. The lot would require approximately 6,250-square yards of pavement. The proposed pavement section shall be 2-inches of HMAC, 6-inches of flexible base course, 6-inches of sub-grade. The roll curb if installed, on the south perimeter would transport runoff to inlet grates in the southwest corner of the lot. Runoff would then drain to an underground chamber storage system. Layout of the improvements is shown in Figure 18-1.


Lot 35 Coaches Building Lot					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Finish & Install Grate Inlet	EA	\$ 2,000.00	2	\$ 4,000.00
2	Furnish & Install 3-inch Rolled Curb	LF	\$ 40.00	230	\$ 9,200.00
3	Furnish & Install 2" HMAC, 6" Basecourse and Re-compact Subgrade	SY	\$ 45.00	6,250	\$ 281,250.00
4	Furnish and Install Underground Drainage Storage System	LS	\$ 100,000.00	1	\$ 100,000.00
SUBTOTAL:					\$ 394,450.00
20% Contingency:					\$ 78,890.00
Total:					\$ 473,340.00



Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

FIGURE 18-1



LEGEND
 PROPOSED IMPROVEMENTS

19. Lot 34 – Tailgating Lot

Lot 34 is located east of Aggie Memorial Stadium and west of I-25. The lot has a drainage arroyo in the southeast portion of the lot. During our site visit, the area had been graded for the campus rodeo. We were unable to identify any drainage concerns in the area. The drainage can be improved in Lot 34 if regular maintenance is performed. We do not recommend any significant changes to be made to the lot.



FIGURE 19-1

N



200

Feet

LEGEND



PROPOSED IMPROVEMENTS

20. Lot 70 – DACC

Lot 70 is located east of the Dona Ana Community College – Central Campus near the intersection of Gregg St. and Sam Steel Way. Comparing original photos to the ones taken on our site visit on July 2, 2013, we determined the parking lot had recently been repaved. In Figure 20-1 you can see water marks on the pavement which indicate existing drainage heads towards the inlet in the east corner of the lot with no problem. Based on our findings no action is required at this location.



Figure 20-1

21. Monagle Hall – Southside

Monagle Hall is located in the northeast portion of campus between RGH Residence Hall and the Corbett Center. Landscaping around the perimeter of the building tends to slope away from the building, creating positive drainage except at the southeast exterior of the complex. At this location, an adjacent grass landscape area is sloped towards the building, allowing runoff to flow towards the base of the building, as seen in Figure 21-1.

Based on existing slopes, runoff from roof drains and landscape areas are ponding roughly 4-feet away from the building. The total drainage area is approximately 8,250-square feet or 0.19 acres. Based on the City of Las Cruces Runoff Analysis, the area has a peak flow rate of 0.60-cfs of runoff. The runoff is intended to flow east to a sidewalk area and continues to landscape areas east of the building.

It can be seen in Figure 21-2, that concrete was recently replaced on the east end of the building and created a low spot where the landscape and sidewalk meet. Continuous ponding at this location has caused settlement of the concrete splash pads next to the building. Location and orientation of the pictures below can be seen on Figure 21-3.



Figure 21-1



Figure 21-2

**New Mexico State University
Auxiliary Services Drainage Concerns
August 2013**

Monagle Hall SouthSide Drainage								
	Drainage Area	Drainage Area	Runoff Coefficient	Runoff Coefficient	Flow Coefficient	Peak Flow Rate	Storage Volume	Storage Volume
	Ft ²	Acre	Valley	Mesa		CFS	Ft ³	CY
Monagle South Side	5500.00	0.13	-	2.00	1.60	0.40	916.67	33.95

Recommendation

To prevent ponding at this location would require the addition of a concrete valley gutter, and the removal and replacement of the sidewalk adjacent to the landscape area. The layout for the concrete valley gutter is shown in Figure 21-3. The valley gutter would run from the connection to the sidewalk 70-feet east make a 45-degree bend and continue 45-feet southwest to the existing sidewalk in front of the main entrance. The purpose of the 45-degree bend is to avoid disturbance of the existing sewer lift station. The gutter would be 3-feet wide with a depth of 4-inches. Where the proposed gutter outlets to the east, a 27'x7.5' section of sidewalk will need to be removed and replaced to match the slope of the existing valley gutter and the existing sidewalk to the east.

Monagle Hall SouthSide					
BID ITEM	MATERIAL DESCRIPTION	UNIT	UNIT COST	QUANTITY	ITEM COST
1	Remove Existing Sidewalk	SY	\$ 11.00	25	\$ 275.00
2	Sideslope Earthwork	SY	\$ 5.00	250	\$ 1,250.00
3	Sodding Sideslope	SF	\$ 0.75	2,100	\$ 1,575.00
4	Furnish & Install 36" wide Valley Gutter	LF	\$ 60.00	120	\$ 7,200.00
5	Furnish and Install 4-inch Concrete Sidewalk	SY	\$ 45.00	25	\$ 1,125.00
SUBTOTAL:					\$ 11,425.00
20% Contingency:					\$ 2,285.00
Total:					\$ 13,710.00

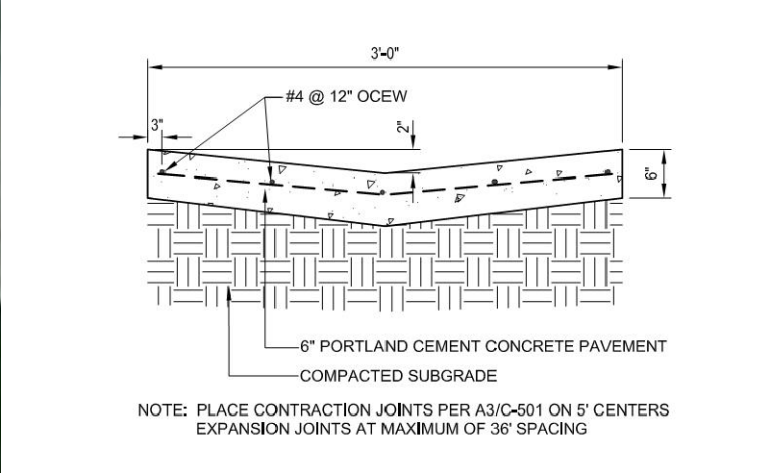
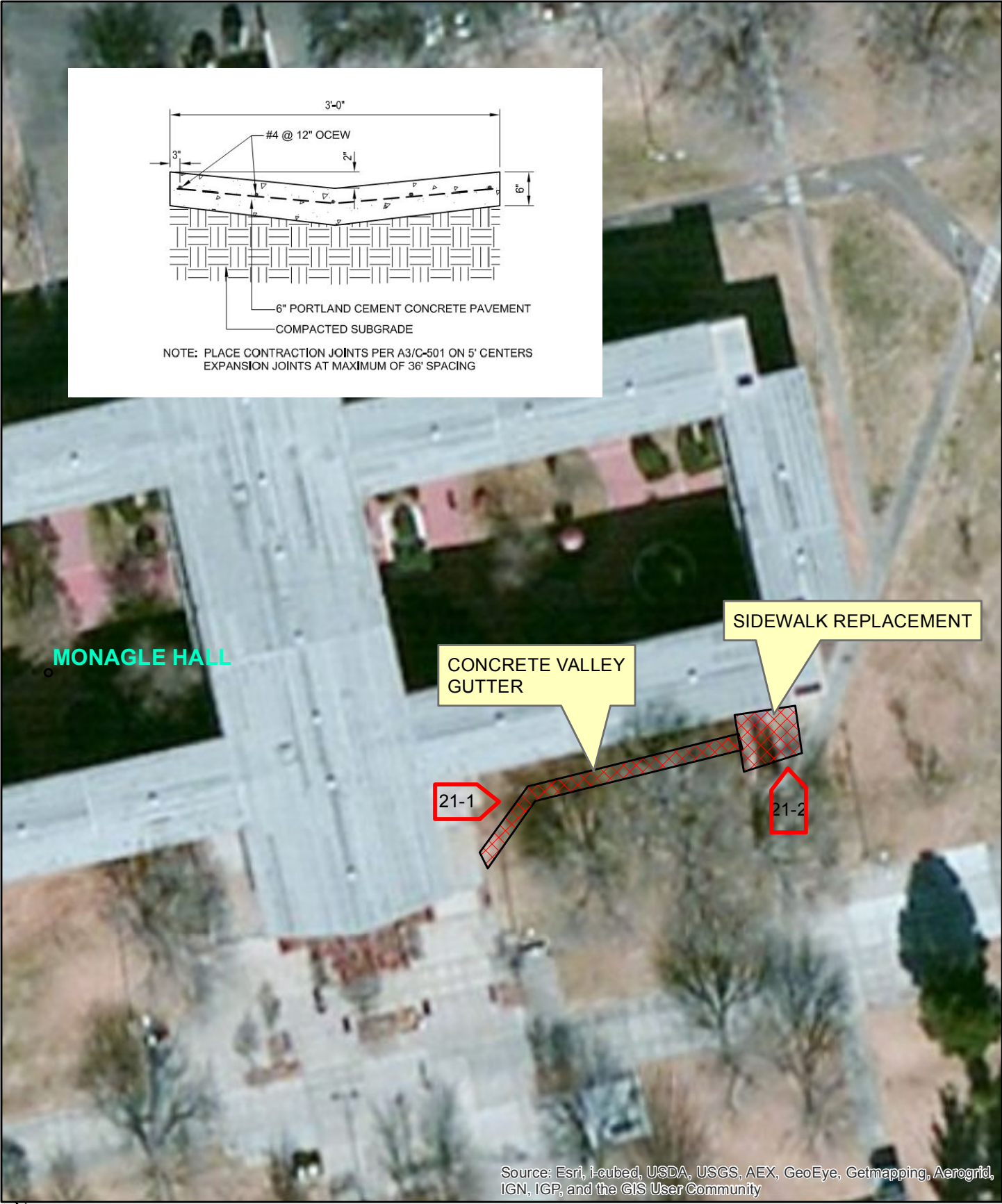



FIGURE 21-3



LEGEND
 PROPOSED IMPROVEMENTS

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

REMOVED FROM SCOPE

22. Corbett Center Student Union

The Corbett Center Student Union is located near the center of campus between Monagle Hall and the Student Counseling Center. This building is experiencing flooding at the north entrance at the bottom of the stairwell. This is due to the lack of drainage structures in the area. This location was asked to be removed from the scope of work due to the future renovation of the building, in which the drainage problems will be taken into account.

APPENDIX A

**New Mexico State University
Auxiliary Services Drainage Concerns
August 2013**

ENGINEERS OPINION OF PROBABLE COST

NEW MEXICO STATE UNIVERSITY AUXILIARY SERVICES DRAINAGE CONCERNS		
PROJECT NO.	PROJECT LOCATION	EOPC
1	MONAGLE HALL - NORTHSIDE	\$ 58,764.00
3	CERVANTES VILLAGE - COMPLEX B	\$ 21,931.20
4	VISTA DEL MONTE APARTMENT COMPLEX - LOT 79W	\$ 5,666.40
5	LOT 23 - GARCIA HALL	\$ 7,480.80
6	DRAINAGE CHANNEL - PAN AM CENTER	\$ 4,905.30
7	LOT 59 - CENTRAL PLANT	\$ 3,970.80
8	LOT 19/ LOT 20	\$ 6,673.73
9	LOT 72 - ANDERSON HALL (PSL)	\$ 4,323.30
10	LOT 75 - NMDA	\$ 20,599.50
11	LOT 27 PAN AMERICAN CENTER PARKING LOT	\$ 22,501.20
12	LOT 64 - GERALD THOMAS	
	Option 1	\$ 232,560.00
	Option 2	\$ 1,344.00
	Option 3	\$ 3,897.60
13	LOT 100 - NATATORIUM	\$ 2,672.40
14	LOT 74 - NMDA	
	Option 1	\$ 50,400.00
	Option 2	\$ 604.80
15	LOT 77A AND LOT 97 - ACADEMIC RESEARCH COMPLEX	
	Option 1	\$ 29,904.00
	Option 2	\$ 19,800.00
16	LOT 48 - RENTFROW GYM	\$ 47,118.00
17	LOT 83 - GREEK HOUSING/STADIUM AREA	\$ 43,382.40
18	LOT 35 - COACHES BUILDING LOT	\$ 473,340.00
21	MONAGLE HALL - SOUTHSIDE	\$ 13,710.00