



Roof Condition Analysis

Prepared for:

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Terrell Plaza
1201 Austin Highway
Suite 139,
San Antonio, TX
78209

Prepared by:

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Terrell Plaza

Date: May 22, 2003

Judy Holstein
Terrell Plaza
1201 Austin Highway
Suite 139
San Antonio, TX 78209

Subject: Terrell Plaza

In accordance with your request, a visual inspection of the roof at the referenced building was conducted on Jan 05, 2003. The purpose of the inspection was to obtain a general overview of the current condition of the roof and to provide recommendations for repairing the existing roof as well as related budget cost estimates for the repair work. Please find enclosed our proposal to refurbish your leaking manufacturing area roof.

Approximately 1,500 square feet of wet insulated roof will need to be cut out down to the steel deck and disposed of prior to working on the balance of the roof. The rest of the 16,000 square foot roof appears to have dry insulation but the membrane has deteriorated to the point that it can no longer function as a waterproofing barrier for any predictable length of time.

Our proposal calls for the recovering of the complete roof area with a new white single ply membrane . By recovering the roof, you will be saving the investment you have in your existing dry insulation as well as minimizing the cost of removal and disposal at the local dump.

The complete new roof system will carry a 15 year labor and material warranty.

We can commence roof work within two weeks of receipt of your purchase order and would anticipate completion within three weeks of commencement given good weather conditions. Our quotation remains valid for 30 days from the date of this letter. Please feel free to contact us if you have any questions. We look forward to servicing your roofing needs.

Respectfully,

Alan Johnson
ABC Roofing Services

Facility Summary**Client Name:** Terrell Plaza**Facility Name:** Terrell Plaza**Facility Address:** 1201 Austin Highway
Suite 139,
San Antonio, TX**Roof Inspection****Date:** January 05, 2003**Recommendations - Summary**

Section	Name	Replacement Value	Activity	Amount \$
A	Building A	\$559,740	Repair	\$10,563
B	Building B	\$982,875	Repair	\$5,250
C	Building C	\$739,950	Recover	\$50,000
D	Building D	\$453,000	Tear-off and replacement	\$100,000
		\$2,735,565		\$165,813



Designation: A

Roof Name: Building A

Roof Size: 37,316 sq. ft.

Est. Replacement Cost: \$559,740

Existing System Type: Conventional Mod Bit - Hot Applied

Year Installed: 1990 (Estimated)

Height: 25 feet

Slope: 1/8" in 12

Interior Sensitivity: Normal

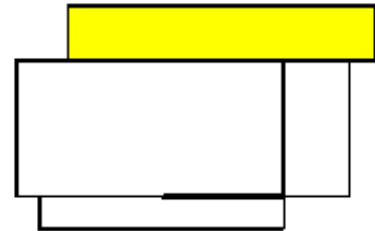
Condition Index: Poor

Drainage: Adequate

Currently Leaking? Yes

History of Leaking? Yes

Drainage and Leak Details: Leak detected after heavy rains. Has also leaked in the past.



Existing Roof System Construction

Layer Type	Description	Method of Attachment
Surfacing	Gravel	Hot asphalt
Membrane	BUR - 1 ply	Hot asphalt
Deck	Light weight concrete	Poured
Deck	Galvanized Steel	Spot Welded

Overall Core Assessment

The waterproofing capabilities of the roof membrane would appear to be inadequate at this point in time.



Core Photos

Photo	Details
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Photo #: 3

Date: Jan 7, 2003

Description: Test cut to determine components.

Roof Top Details

Photo	Details
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Photo #: 7

Type: Equipment

Description: HVAC Equipment




Membrane: APP mod bit - 1 ply

Flashing Metal: Not applicable

Details: This building has an excessive amount of abandoned equipment and details.



Roof Top Details continued...

Photo	Details
	<p>Photo #: 6</p> <p>Type: Equipment</p> <p>Description: Skylights</p> <p>Membrane: Not applicable</p> <p>Flashing Metal: Painted steel</p> <p>Details: The expansion joint metal has voids at the joints of the metal work. Previous repairs were completed, but these repairs are failing.</p>
	<p>Photo #: 8</p> <p>Type: Perimeter</p> <p>Description: Expansion Joint</p> <p>Membrane: Not applicable</p> <p>Flashing Metal: Painted steel</p> <p>Details: Perimeter wall detail consists of metal tie-in to BUR at the base angle change and metal cap over top of the wall. The metal cap has holes as a result of rusting.</p>
	<p>Photo #: 9</p> <p>Type: Projection</p> <p>Description: Pitch Pocket</p> <p>Membrane: Mod Bit - 1 Ply</p> <p>Flashing Metal: Stainless Steel</p> <p>Details:</p>



Membrane Defects

Photo	Details
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Photo #: 4

Type: Alligatoring

Severity: Moderate

Details: Alligatoring is the cracking of the surfacing bitumen asphalt which occurs during the aging process in which the loss of volatile oils and the oxidation brought about by solar radiation; produces a pattern of cracks similar to an alligator's hide. The cracks may or may not extend through the surfacing bitumen.

When alligatoring cracks extend through the entire waterproofing surface, the underlying felts can become exposed to moisture, which will progressively cause the strength in the felts to decrease. Splitting of the roof membrane may result.



Photo #: 5

Type: Blueberries

Severity: Minor

Details: Small spherical detached pieces of asphalt. They are formed when water penetrates the top coat of asphalt; freeze-thaw cycling breaks pieces of the flood-coating loose, and the wind blows these pieces around until they are eroded into a spherical shape. Subsequently, water flow causes them to accumulate in low spots on the roof.



Moisture Surveys			
Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Jan 07, 2003	Cut tests and Moisture Probes	Partially Wet	Partially Wet
Details	The moisture survey performed found approximately (total damaged area) square feet of roof area to have moisture in the insulation and/or the roof membrane. This represents approximately (75)% of the total roof area.		

Moisture Survey Photos	
Photo	Details



Photo: 10
Date: Jan 7, 2003
Description: Core Sample



Recommendations

Type of Activity	Urgency	\$
Repair	High	\$10,563

We recommend the following roof repairs. Roof work will be performed in the following manner:

- Cut out and replace 200 square feet of wet insulated roofing adjacent to the large HVAC unit.
- Scarify adjacent existing roof for a distance of 18 inches and prepare the surface for tie-in with new roofing materials.
- Employ the same materials as was removed. Bring new membrane 12 inches onto scarified perimeter.
- Tie-in new roofing to old membrane with additional two plies of 12 inch wide felt centered on the leading edge of the new roofing.
- Apply new 3/8 inch gravel at a rate of 400 lb. per square onto the new roofing.
- Repair a total of 29 identified blisters in the membrane in accordance with standard NRCA blister repair procedures.
- Reinforce 64 flashing corners on 16 exhaust units employing a sandwich application of mastic and 6 inch fiberglass mesh.
- Reinforcement shall extend from the top of the flashing detail to 6 inches onto previously scarified membrane surface.
- Apply a total of 900 square feet of emulsion based restorative coating to the bare felt areas in the S.E. and S.W. corners after appropriate cleaning and preparation of the membrane surface.
- Install new 3/8 inch gravel at a rate of 400 lb. per square over the fresh coating.
- Remove the ponding water conditions by installing 2 new 4 inch cast drains in the low lying areas.
- Install 82 lineal feet of associated cast plumbing and connections to existing rainwater piping.
- Remove metal from 560 lineal feet of the complete perimeter detail and store for reuse.
- Scarify the complete perimeter membrane for a distance of 12 inches from the base of the cant and clean.
- Trim all loose roofing materials around the complete perimeter and clean.
- Apply a sandwich application of 12 inch fiberglass mesh and fibrated, asbestos-free asphalt-based mastic to the complete 560 lineal feet of perimeter detail.
- The reinforcement shall extend from the top of the cant to 6 inches onto the horizontal membrane surface.
- Apply a 4 mil polyethelene divorce layer over the fresh mastic to prevent contact of the mastic with the metal.
- Reinstall metal detail and apply new 3/8 inch gravel over the mastic on the roof surface.

In conjunction with any manufacturer's warranty, ABC Roofing Services is responsible for all defects caused by faulty workmanship for two years.



Designation: B
Roof Name: Building B
Roof Size: 65,525 sq. ft.
Est. Replacement Cost: \$982,875
Existing System Type: Conventional BUR - Hot Applied
Year Installed: 1990 (Estimated)
Height: 25 feet
Slope: 1/8" per ft.
Interior Sensitivity: Normal
Condition Index: Fair
Drainage: Adequate
Currently Leaking? No
History of Leaking? Yes
Drainage and Leak Details:



Existing Roof System Construction

Layer Type	Description	Method of Attachment
Surfacing	Gravel	Hot asphalt
Membrane	BUR - 2 ply	Hot asphalt
Deck	Vermiculite fill on concrete	Poured - in - place
Deck	Galvanized metal	Welded

Overall Core Assessment

Roof is need of repair ASAP



Core Photos

Photo	Details
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Photo #: 12

Date: Jan 7, 2003

Description: Core Cut

Roof Top Details

Photo	Details
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Photo #: 16

Type: Equipment

Description: Condensation Pipes

Membrane: PVC - Reinforced

Flashing Metal: Painted Steel

Details: Separated condensation pipes



Roof Top Details continued...

Photo	Details
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Photo #: 15

Type: Equipment

Description: HVAC equipment

Membrane: APP mod bit - 1 ply

Flashing Metal: Not applicable

Details: An excessive amount of abandoned equipment curbs are present. These details are in bad condition.

With the abandoned equipment curbs, pitch pockets were installed for electrical service to the equipment. The material in the pitch pockets is cracked allowing water to enter into the building. The pitch pans are not full, allowing water to gather on top of the cracked material.



Photo #: 48

Type: Perimeter

Description: Expansion Joint

Membrane: APP Mod Bit - 1 Ply

Flashing Metal: Painted Steel

Details:



Membrane Defects

Photo	Details
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Photo #: 13

Type: Open seam

Severity: Moderate

Details: Water appears to be penetrating seams of the modified section (over first floor roof area).



Photo #: 14

Type: Splits @ expansion detail

Severity: Moderate

Details: Splits in material at the expansion detail between the roof areas on the first floor roof.

Moisture Surveys

Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Jan 07, 2003	Infra Red	Partially Damp	Partially Damp
Details	The moisture survey performed found approximately (total damaged area) square feet of roof area to have moisture in the insulation and/or the roof membrane. This represents approximately (30)% of the total roof area.		



Moisture Survey Photos

Photo

Details



Photo: 12

Date: Jan 3, 2003

Description: Confirmation damp area



Recommendations

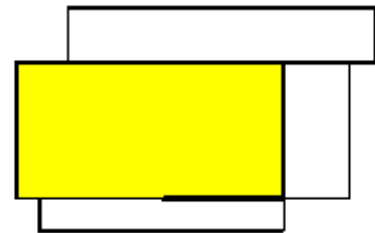
Type of Activity	Urgency	\$
Repair	Moderate	\$5,250

We recommend the following roof repairs. Roof work will be performed in the following manner:

- Tie-in new roofing to old membrane with additional two plies of 12 inch wide felt centered on the leading edge of the new roofing. Apply new 3/8 inch gravel at a rate of 400 lb. per square onto the new roofing.
- Repair a total of 29 identified blisters in the membrane in accordance with standard NRCA blister repair procedures.



Designation: C
Roof Name: Building C
Roof Size: 49,330 sq. ft.
Est. Replacement Cost: \$739,950
Existing System Type: BUR
Year Installed: 1990 (Estimated)
Height: 30 feet
Slope: 1/8" per ft.
Interior Sensitivity: Normal
Condition Index: Good
Drainage: Adequate
Currently Leaking? No
History of Leaking? No
Drainage and Leak Details:



Existing Roof System Construction

Layer Type	Description	Method of Attachment
Surfacing	Gravel	Hot asphalt
Membrane	BUR - 2 ply	Hot asphalt
Deck	Vermiculite fill on concrete	Poured - in - place
Deck	Galvanized metal	Welded



Core Photos

Photo	Details
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Photo #: 19

Date: Jun 29, 2000

Description: Cut Test

Roof Top Details

Photo	Details
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Photo #: 23

Type: Drain/Scupper

Description: External scupper

Membrane: Not applicable

Flashing Metal: Galvanized steel

Details: Scuppers installed every 6' along SW wall. Appear to be performing as intended.



Roof Top Details continued...

Photo	Details
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Photo #: 24

Type: Equipment

Description: HVAC

Membrane: APP mod bit - 1 ply

Flashing Metal: Not applicable

Details: HVAC curb details appear to be performing as intended. Condition looks good.



Photo #: 25

Type: Pitch Pan

Description: Pitch Pan



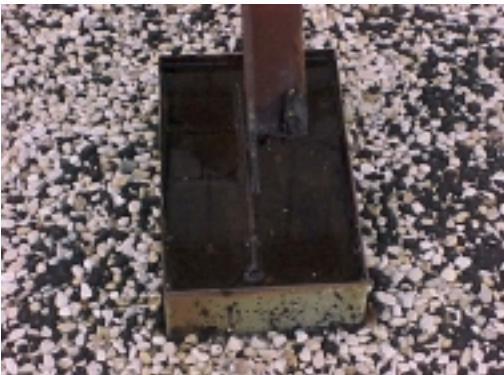
Membrane: Not applicable

Flashing Metal: Painted steel

Details: Pitch pans are in bad condition. Cracks/voids are in the pitch material and the pans were not filled. Water is contained over the cracked material allowing water to infiltrate the building.



Membrane Defects

Photo	Details
	<p>Photo #: 20</p> <p>Type: Hole in block wall (unit 165)</p> <p>Severity: Major</p> <p>Details: This hole was placed in the wall for installation of non-roof related items. Holes remain following the removing of the installed items.</p>
	<p>Photo #: 21</p> <p>Type: Hole in wall (unit 165)</p> <p>Severity: Major</p> <p>Details: Hole was placed in parapet wall for the installation of electrical conduit. This would be a major source of water infiltration into the building structure.</p>
	<p>Photo #: 22</p> <p>Type: Pitch pocket with void/cracks</p> <p>Severity: Major</p> <p>Details: Pitch pans have voids/cracks in the pitch material. Pans were not filled to the top, therefore are holding water. The cracks/voids will allow water to infiltrate the building.</p>



Moisture Surveys

Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Jan 05, 2003	Infra Red	Slightly Damp	Slightly Damp
Details	The moisture survey performed found approximately (total damaged area) square feet of roof area to have moisture in the insulation and/or the roof membrane. This represents approximately (20)% of the total roof area.		

Moisture Survey Photos

Photo	Details
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Photo: 3

Date: Jan 4, 2003

Description: Confirmation damp area



Recommendations

Type of Activity	Urgency	\$
Recover	Moderate	\$50,000

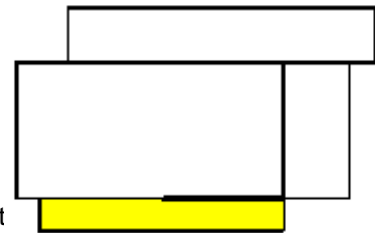
We recommend a complete recover application to refurbish this roof. Roof work will be performed in the following manner:

Standard boiler plate scope of work or specification could be placed here.

All commercial work carries a standard 15-year warranty that covers material and labor for repair or requirement for the full 15 years. The warranty is to be delivered upon satisfactory final inspection and receipt of final payment from project completion.



Designation: D
Roof Name: Building D
Roof Size: 30,200 sq. ft.
Est. Replacement Cost: \$453,000
Existing System Type: BUR / Modified Bitumen
Year Installed: 1990 (Estimated)
Height: 25 feet
Slope: 1/8" per ft.
Interior Sensitivity: Normal
Condition Index: Fair
Drainage: Inadequate
Currently Leaking? No
History of Leaking? Unknown
Drainage and Leak Details: Excessive ponding on this building. Leaks are not evident.



Existing Roof System Construction

Layer Type	Description	Method of Attachment
Surfacing	Gravel	Hot asphalt
Membrane	BUR - 2 ply / Modified Bitumen	Hot asphalt
Deck	Vermiculite fill on concrete	Poured - in - place
Deck	Galvanized metal	Welded

Overall Core Assessment

Purpose of core assessment is to determine component materials.



Core Photos

Photo	Details
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Photo #: 27

Date: Jul 22, 1999

Description: Assessment core.

Roof Top Details

Photo	Details
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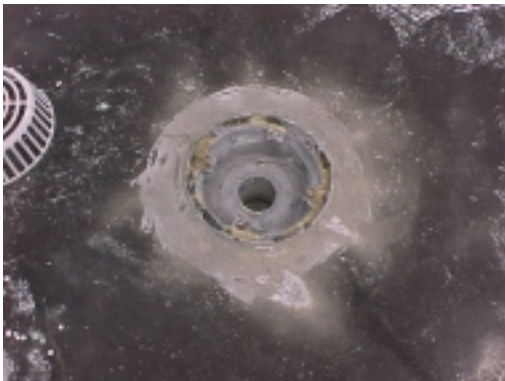


Photo #: 31

Type: Drain

Description: Interior drain

Membrane: APP mod bit - 1 ply

Flashing Metal: Not applicable

Details: Interior drains appear to be performing as intended.



Roof Top Details continued...

Photo	Details
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Photo #: 32

Type: Expansion

Description: Expansion Joint

Membrane: APP mod bit - 1 ply

Flashing Metal: Painted steel

Details: Voids/splits in expansion joint material. Expansion joint was coated recently, but this repair is inadequate. Splits in the rubber base material cannot be repaired using a paint/coating.

Membrane Defects

Photo	Details
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Photo #: 28

Type: Pitch pockets

Severity: Major

Details: Material in pitch pocket has voids/cracks. Possible source of water entry into the building interior.



Membrane Defects continued...

Photo	Details
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Photo #: 30

Type: Ponding

Severity: Major

Details: Ponding water can be traced to any of several factors. First, a roof may pond water as a result of poor housekeeping on the roof which contributes to clogged drains, gutters and downspouts. The build up of roof top debris or displaced gravel ballast frequently blocks water flow and creates ponds. Secondly, the building's roof top drainage system may not have been designed properly. Finally, ponds form as a result of such common conditions as building settlement and deck deflection.

Moisture Surveys			
Survey Date	Type of Survey	Insulation Condition	Membrane Condition
Jan 07, 2003	Infra Red	Partially Damp	Partially Damp
Details	Random areas of moisture were located in the insulation and roof membrane throughout the complete roof area. Approximately (total damaged area)square feet of damaged roof area was located. This represents approximately(15) % of the total roof area.		



Moisture Survey Photos

Photo

Details



Photo: 19

Date: Jan 7, 2003

Description: Confirmation damp area



Recommendations

Type of Activity	Urgency	\$
Tear-off and replacement	Moderate	\$100,000

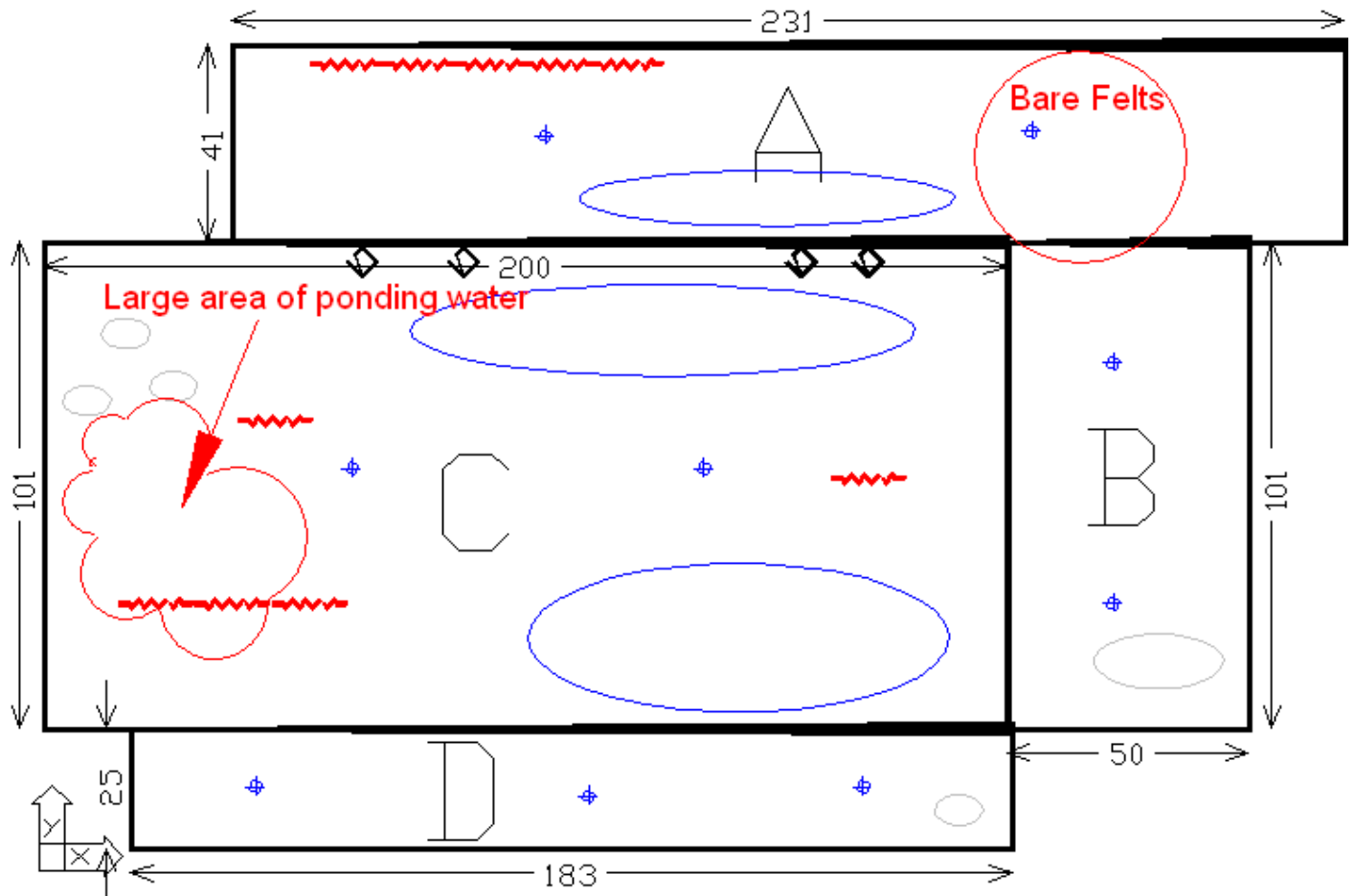
We recommend complete tear-off and replacement of the roof. Remove all roofing materials down to the deck and then install a new roof in the following manner:

Standard boiler plate scope of work or specification could be placed here.

All commercial work carries a 20-year prorated warranty that covers both material and labor for the first 10 years and 10 years of prorated material only coverage. The warranty is to be delivered upon satisfactory final inspection and receipt of final payment for project completion.



Facility: Terrell Plaza
1201 Austin Highway
Suite 139,
San Antonio, TX
US





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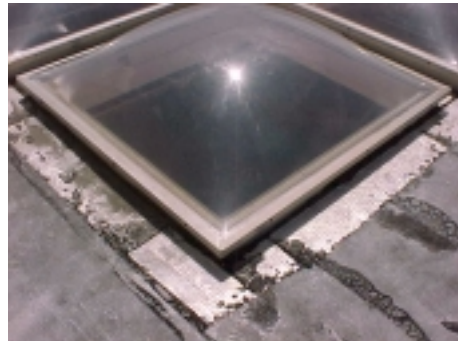
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Photo Album

#	Description	Annotation
1	Terrell Plaza	Building exterior of building A.
2	Roof Section A	Partial overview of Building A
3	Test cut	Test cut completed. Determined components of system.
4	Alligatoring	Alligatoring found on this roof section
5	Blueberries	Blueberries on roof section A
6	Skylight	Close-up of skylight detail. All of these skylights have exposed metal flashing and are not watertight.
7	Abandoned Equipment	
8	Expansion Joint	Metal cap detail showing rusted areas.
9	Pitch pans	Overview of pitch pans that hold water and have voids/cracks.
10	Core Cut	Core Cut
11	Roof Section B	Partial overview of buiding B.
12	Test Cut	Core cut to determine roof composition
13	Open Seam	Water leaking through open seam
14	Splits	Splits at expansion detail
15	HVAC Equipment	Abandoned HVAC
16	Separated condensation pipes.	Separated condensation pipe allowing water to drain onto roof.
18	Building C	Overview of Building C
19	Core Cut	Test cust to determine composition of the roof
20	Hole in Wall	Hole through parapet wall on building C @ unit 165.
21	Holes in Wall (2)	Holes in parapet wall on building C @ unit 165.
22	Pitch pans	Pitch pans with cracks/voids hold water.
23	Scuppers	Scupper detail on building C.
24	Unit Detail	Typical unit detail of building C.
25	Pitch pocket	Pitch pocket - typical.
26	Roof Section D	Overview of section D
27	Test Cut	Core cut to determine composition
28	Pitch Pans	Painted pitch pockets over unit 133.
30	Ponding	Excessive ponding of water on building D.
31	Drain	
32	Expansion Joint Detail	Expansion joint detail on modified bitumen roof level on building D.

