



OPEN MEETING

REGULAR MEETING OF THE THIRD LAGUNA HILLS MUTUAL MAINTENANCE AND CONSTRUCTION COMMITTEE

Monday, May 2, 2022 at 1:30 PM
24351 El Toro Road – Board Room & Virtual with Zoom

Laguna Woods Village owners/residents are welcome to participate in all open committee meetings in-person and virtually. To submit comments or questions virtually for committee meetings, please use one of the following options:

1. Join the committee meeting via Zoom by clicking this link: <https://us06web.zoom.us/j/81435641900> or by calling 1-669-900-6833, Webinar ID: 81435641900.
2. Via email to meeting@vmsinc.org any time before the meeting is scheduled to begin or during the meeting. Please use the name of the committee in the subject line of the email. Name and unit number must be included.

NOTICE AND AGENDA

This Meeting May Be Recorded

1. Call to Order
2. Acknowledgement of Media
3. Approval of Agenda
4. Approval of Meeting Report from March 7, 2022
5. Chair's Remarks
6. Member Comments – *(Items Not on the Agenda)*
7. Department Head Update

Consent:

All matters listed under the Consent Calendar are considered routine and will be enacted by the committee by one motion. In the event that an item is removed from the Consent Calendar by members of the committee, such item(s) shall be the subject of further discussion and action by the committee.

8. Project Log
9. Solar Production Report

For Discussion and Consideration:

10. Recommendation from Parking and Golf Cart Subcommittee for Electrical Engineering Services in CDS 317 (verbal update)
11. Lighting Levels on Via Del Faro at Ave. Sosiega (verbal update)
12. Roofing Material Comparison (presentation)

Items for Future Agendas:

- Policy to address reimbursements for MI events when residents pay for work due to delay in response from VMS
- Cost estimate for motion sensor lights to replace photocell controllers in common areas for three-story buildings
- Report on the feasibility of additional solar installations

Concluding Business:

13. Committee Member Comments
14. Date of Next Meeting: July 7, 2022
15. Recess – At this time, the meeting will recess for a short break and reconvene to Closed Session to discuss the following matters.

Closed Session Agenda

- Approval of the Agenda
Chair's Remarks
Discuss and Consider Contractual Matters
16. Adjournment

Ralph Engdahl, Chair
Manuel Gomez, Staff Officer
Telephone: (949) 268-2380

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OPEN MEETING

**REPORT OF THE REGULAR MEETING OF THE THIRD LAGUNA HILLS
MAINTENANCE AND CONSTRUCTION COMMITTEE**

Monday, March 7, 2022 at 1:30 pm

24351 El Toro Road – Board Room & Virtual with Zoom

MEMBERS PRESENT: Ralph Engdahl - Chair, Robert Mutchnick, John Frankel, Craig Wayne, James Cook

MEMBERS ABSENT: None

OTHERS PRESENT: Judith Troutman – Advisor, Mark Laws

STAFF PRESENT: Manuel Gomez – Maintenance & Construction Director, Bart Mejia – Maintenance & Construction Assistant Director, Ian Barnette – Maintenance & Construction Assistant Director, Guy West – Projects Manager, Koh Shida – Maintenance Operations Manager, Laurie Chavarria – Sr. Management Analyst, Sandra Spencer – Administrative Assistant

1. Call to Order

Chair Engdahl called the meeting to order at 1:30 p.m.

2. Acknowledgement of Media

Chair Engdahl noted that the meeting was broadcasting on Granicus and being recorded. There were no media present and the meeting was not being televised.

3. Approval of the Agenda

The agenda was approved as written.

4. Approval of Meeting Report from January 3, 2022.

The meeting report from January 3, 2022 was approved as written.

5. Chair's Remarks

Chair Engdahl had no remarks.

6. Member Comments – (Items Not on the Agenda)

A member requested a ramp and a push button door entrance be installed at 2401 Via Mariposa. The committee directed staff to inform the member of the mutual policy to allow these types of modifications at the expense of the requesting mutual owner. A further evaluation of physical constraints at the location would be needed prior to replying to the manor owner.

7. Department Head Update

None

Consent

All matters listed under the Consent Calendar are considered routine and will be enacted by the Committee by one motion. In the event that an item is removed from the Consent Calendar by members of the Committee, such item(s) shall be the subject of further discussion and action by the Committee.

The Consent Calendar was approved unanimously.

8. Project Log

9. Solar Production Report

10. SCE Charge Ready Application Update and Recommendation to Approve the Next Steps

Mr. Mejia presented an update on the charging port applications via PowerPoint and answered questions from the committee. The remaining options included: 1) support SCE's recommendations, 2) withdraw all applications and resubmit new applications under the "customer" installed Make Ready Program, or 3) withdraw all applications and continue to search for new programs to assist with the installation of new EV charging stations. Further discussion ensued regarding the evolution of technology; return on investment; and the scarcity of regular parking spaces.

A motion was made and unanimously approved to reject Options 1 & 2 and accept Option 3.

11. Present RFP for Addressing Seepage at Brazo and at Calzado

Mr. Mejia provided an update on the status of the RFP and answered questions from the committee. A contract for construction documents and contractor bid packages for addressing the seepage will be discussed in the closed session following this open meeting.

12. Present RFP for Compliance with SB326

Mr. West presented an overview of Senate Bill 326 (SB326) via PowerPoint and answered questions from the committee. The presentation included the reason for the Bill; types of structures that need to be inspected; the frequency of those inspections; what type of professional is qualified to make those inspections; the responsibility of the inspector to report findings; and how long the inspection reports need to be kept after the inspections take place. Staff invites input on the draft RFP which seeks proposals from consultants to perform the required inspections. The RFP will be advertised later this month.

Results of the RFP will be presented at a future committee meeting.

13. Potential Installation of Pressure Regulator Valves at All Mains

Mr. Barnette discussed the presence of pressure regulator valves in various buildings in Third Mutual. As buildings are determined to have high water pressure, valves are installed. Should all the buildings be retrofitted with pressure regulator valves, the cost would be approximately \$3 million and would have to be installed by an outside vendor due to staffing limitations. Discussion ensued regarding frequency of water damage caused by leaks; costs associated with each leak; and potential causes of water leaks.

A motion was made and unanimously approved to request staff to refine the costs to install pressure regulator valves on all buildings for presentation as part of the 2023 budget process.

14. Quote for Light Pole Replacement on Via Del Faro at Ave. Sosiega

Mr. Barnette updated the committee on the status of a replacement light pole. The LED pilot pole that was in that location failed and was removed. A quote for \$37,000 was presented for a like-for-like light pole.

A motion was made and unanimously approved to request staff to arrange for a photometric study to determine the need for an additional street light. If a light is needed for safety reasons, staff is requested to provide a quote for a solar-powered light similar to the model recently priced for installation in the maintenance employee parking lot and to bring that quote to a future committee meeting.

15. Estimates for a Three-Year Termite Inspection Schedule

Mr. Shida summarized the report and answered questions from the committee. Additional discussion followed regarding the costs; the current termite repair budget; the scope of the inspections; and the scope covered by the Prior-To-Paint Program.

Staff was directed to present the proposal for a three-year termite inspection cycle as part of the 2023 budget process.

Items for Future Agendas:

- Cost Estimate for Motion Sensor Lights to Replace Photocell Controllers in Common Areas for Three-Story Buildings
- Policy to address reimbursements for MI events when residents pay for work due to delay in response from VMS (consider review by Resident Policy and Compliance Committee)
- Report on the feasibility of additional solar installations
- Consider offering the option of repiping when drywall has been removed after a moisture intrusion event

Concluding Business:

16. Committee Member Comments

None

17. Date of Next Meeting – May 2, 2022

18. Recess

The meeting was recessed at 3:10 p.m.


Ralph Engdahl, Chair

Ralph Engdahl, Chair
Manuel Gomez, Staff Officer
Telephone: (949) 268-2380

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Third Mutual Project Log (March 2022) Prepared 4-25-22						
#	Dept	Name	Description	Status	Estimated Completion/On-going Programs	Budget
1	920 Projects	Dry Rot Program	This program is funded to implement a systematic approach to eradicating wood rot throughout Third Mutual.	At buildings 3241 and 3242, work is complete. At building 3244, work is in progress and is scheduled to be completed on April 29. At building 3499, work is in progress and is scheduled to be completed May 12. Buildings 4006, 4009, 4010 and 4011: repair plans have been approved by the City. Repairs will be completed by November.	Annual Program - December 2022	Budget: \$275,000 Exp: \$89,940 Balance: \$185,060
2	920 Projects	Building Structures	This ongoing program is funded by reserve funds to repair or replace building structural components that are not performing as designed. As building structural issues are reported and inspection requests are received, staff schedules an engineer to field inspect and, if required, provide a recommendation for repairs. In addition, roofing repairs are performed after Prior to Paint crews replace fascia due to dry rot. As part of this budget, staff will proactively inspect buildings for drainage issues and provide repairs as needed.	Building 3299 Girder Retrofit: Work is complete. 3441-A: Building Drainage: Rain Gutters are scheduled to be installed by the end of May. Building 5121 and 5122 Building Drainage: Rain Gutters are scheduled to be installed by the end of May.	12/31/2022	Budget: \$500,000 Exp: \$66,892 Balance: \$433,109
3	920 Projects	Foundations Program	This ongoing program is funded by reserve funds to replace foundations showing signs of distress or impending failure. These repairs or replacements are performed on an as-needed basis. Staff performs field observations when a foundation inspection request is received. If needed, a structural engineer is then scheduled to inspect the foundation and provide a recommendation.	5321-B Garage Wall Curb Repair: A Structural Evaluation was performed on April 14. Repairs are scheduled to be completed by the end of June.	12/31/2022	Budget: \$25,000 Exp: \$0 Balance: \$25,000
4	904 Maint Svc	Electrical Systems	This ongoing program is funded to repair or replace electrical equipment failures as needed.	None Scheduled	Annual Program - December 2022	Budget \$30,000 Exp: \$0 Balance: \$30,000

#	Dept	Name	Description	Status	Estimated Completion/On-going Programs	Budget
5	910 Bldg. Maint	Garden Villa (GV) Lobby Renovations	This ongoing program is funded by reserve funds to replace the acoustic ceiling, wallpaper and carpet in GV lobbies.	The lobby at building 5515 is scheduled for renovation in May.	Annual Program - December 2022	Budget: \$12,000 Exp: \$0 Balance: \$12,000
6	910 Bldg. Maint	Gutters - Replacement and Repair	This ongoing program is funded by reserve funds to replace deteriorated rain gutters and repair existing gutters as needed. Buildings on the exterior paint program will be selected based on drainage issues and will be scheduled for installation of seamless gutter systems by an outside vendor in conjunction with the paint program.	None Scheduled	Annual Program - December 2022	Budget: \$50,000 Exp: \$0 Balance: \$50,000
7	910 Bldg. Maint	Exterior Paint Program	This 15-year full cycle program is funded by reserve funds to paint all exterior components of each building including the body (stucco/siding); fascia boards; beams; overhangs; doors; closed soffits; structural and ornamental metal surfaces. Decks are top coated and damaged building address signs are replaced. Lead abatement activities are also performed in conjunction with this program.	CDS 215, 206, 217, 201, 202, and 221 are scheduled for 2022. CDS 215 has been completed and we have started CDS 206 and 217.	Annual Program - December 2022	Budget: \$1,238,831 Exp: \$176,828 Balance: \$1,062,003
8	910 Bldg. Maint	Prior to Paint Program (PTP)	This 15-year full cycle program is funded by reserve funds to repair dry rot and decking surfaces prior to painting.	Work is underway in CDS 206 and 217 which consists of 29 buildings, 14 carports and 6 free standing laundries. Estimated completion date is mid April. CDS to be completed in 2022 are: 201, 202, and 221.	Annual Program - December 2022	Budget: \$1,166,430 Exp: \$145,058 Balance: \$1,021,372
9	910 Bldg. Maint	Balcony & Breezeway Resurfacing	This mid-cycle program is funded by reserve funds to waterproof and topcoat seal balcony and breezeway deck surfaces every 7.5 years to protect the deck substructure against future dry rot and improve the aesthetics of the deck surface. Prior to applying topcoat, crews conduct an inspection of the deck structure to locate any dry rot or potential safety hazards.	2022 top coat / breezeway resurfacing will commence in June. Buildings that will be in this cycle are: 3354, 3355, 3356, 3357, 3358, 3359, 3360, 3361, 3362, 3363, 3368, 3369, 3370, 3371, 3413, 3414, 3415, 3416 and 3417.	June - December 2022	Budget: \$110,039 Exp: \$13,247 Balance: \$96,792

#	Dept	Name	Description	Status	Estimated Completion/On-going Programs	Budget
10	920 Projects	Asphalt Paving Program	This annual program is funded by reserve funds to preserve the integrity of CDS street paving. Annual inspections are conducted and repaving is scheduled as needed.	Overlay paving work is scheduled at CDS 219, 330-A, 332, 344 (partial area), 357, 362, and 3371. Full depth paving work is scheduled at CDS 3185. All paving work is scheduled to be completed during the month of July.	Annual Program - July 2022	Budget: \$387,903 Exp: \$0 Balance: \$387,903
11	920 Projects	Seal Coat Program	This ongoing program is funded by reserve funds to extend the life of the asphalt paving by sealing asphalt cracks and applying a bituminous slurry seal to the asphalt surface preventing water intrusion and protecting the asphalt from deterioration.	Seal coat maintenance work is scheduled at CDS 323, 324, 372, 405, 406, 407, 408, 2396, 2401, 3190, 3232, 3241, 3243, 3274, 3275, 3363, 3395, 3500, 5326, 5329, 5333, 5336, 5342, 5345 and 5370. Street sections Luz del Sol, Rayo del Sol, Via Dicha, and Via La Meas will also receive seal coat maintenance. All seal coat work is scheduled to be completed in August.	Annual Program - August 2022	Budget: \$46,057 Exp: \$0 Balance: \$46,057
12	920 Projects	Roof Replacement - BUR to PVC Cool Roofing	This ongoing program is funded by reserve funds to replace roofs at the end of their serviceable life with a PVC Cool Roof system. Built-up roofs are inspected 15 years after installation.	Buildings 2129, 2132, 2324, 3011, 3110, 3113, 3123, 3165, 3367, 3384, 3390, 3396, 3478, 4006, 4022, 5331, 5358, 5368, 5373, 5388, 5390, 5400, 5460, 5461, 5468, 5476, 5489, 5507, 5528, and 5540 are scheduled to begin in April 25th and be completed in October.	April - October 2022	Budget: \$1,099,749 Exp: \$0 Balance: \$1,099,749
13	920 Projects	Emergency Roof Repair Program	This ongoing program is funded as a contingency to preserve and prolong the serviceable life of roofs by performing emergent repairs as needed. As emergency roof leak requests are received, staff schedules the roofing contractor to investigate roof related issues. If required, the roofing contractor will perform the necessary repairs.	None Scheduled	Annual Program - December 2022	Budget: \$123,000 Exp: \$46,017 Balance: \$76,983
14	920 Projects	Roof Replacement - Light Weight Tile to Comp Shingle Roofs	Beginning with the 2020 Business Plan, the Board elected to initiate the Light Weight Tile Replacement program to address premature failure of existing tile roofs. Light weight tile roofs will be replaced with composition shingle roof systems.	Lightweight tile roofs will be removed and replaced with triple laminate composition shingles at buildings 3152, 3174, and 3224. Work was completed in March and invoicing has been submitted for payment.	3/1/2022	Budget: \$119,392 Exp: \$0 Balance: \$119,392

#	Dept	Name	Description	Status	Estimated Completion/On-going Programs	Budget
15	904 Maint Svc	Epoxy Wasteline Remediation	This ongoing program is funded by reserve funds to install seamless epoxy liners within existing interior and exterior waste pipes to mitigate future root intrusion as well as to resolve and prevent future back-up problems related to compromised pipes.	Total number of buildings in Third Mutual: 1407 Number of buildings left to complete: 1097 Building 2369 is scheduled to begin soon.	Annual Program - December 2022	Budget: \$700,000 Exp: \$23,333 Balance: \$676,667
16	920 Projects	Shepherd's Crook	This ongoing program is funded by reserve funds to remove and replace barbed wire with Shepherd's Crook on all perimeter block on a phased approach.	To date, a total of 6,702 LF out of 33,525 LF of Shepherd's Crook has been installed. Contract has been executed and the contractor is currently ordering material for fabrication.	Annual Program - December 2022	Budget: \$35,000 Exp: \$0 Balance: \$35,000
17	904 Maint Svc	Water Lines - Copper Pipe Remediation	This ongoing program is funded by reserve funds to install epoxy liners in copper water lines in all buildings which experience a high frequency of copper pipe leaks.	None Scheduled	Annual Program - December 2022	Budget: \$500,000 Exp: \$0 Balance: \$500,000
18	920 Projects	Elevator Replacement Program	This ongoing program is funded by reserve funds to replace mechanical equipment and interior renovations as needed.	None Scheduled	Annual Program - December 2022	Budget: \$105,000 Exp: \$0 Balance: \$105,000
19	910 Bldg. Maint	Pest Control for Termites	This annual program is funded by operating funds to eradicate dry wood termites from inaccessible areas by tenting buildings for fumigation and includes hotel accommodations during whole structure fumigation. The program also includes funding for local termite treatments and the removal of bees/wasps as needed.	The fumigation program will commence in June and conclude in November.	June to November 2022	Budget: \$174,633 Exp: \$250 Balance: \$174,383

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Third Mutual Solar Production Report

2022 Production													
Third Mutual Project	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Total
2353 Via Mariposa	6,271	8,173											14,444
2381 Via Mariposa	2,278	4,028											6,306
2393 Via Mariposa West	4,949	6,633											11,582
2394 Via Mariposa West	6,819	8,884											15,703
2397 Via Mariposa West	5,716	7,562											13,278
2399 Via Mariposa West	5,037	6,673											11,710
2400 Via Mariposa West	5,672	7,722											13,394
3242 San Amadeo	4,784	6,324											11,108
3243 San Amadeo	4,716	6,091											10,807
3420 Calle Azul	3,502	4,605											8,107
5372 Punta Alta	4,525	6,003											10,528
5510 Paseo Del Lago West	3,361	4,467											7,828
Total Production of kWh =	57,630	77,165	0	0	0	0	0	0	0	0	0	0	134,795

2021 Production													
Third Mutual Project	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Total
2353 Via Mariposa	6,440	7,700	10,750	11,550	12,880	13,770	13,870	12,020	10,130	8,790	6,690	4,814	119,404
2381 Via Mariposa	4,560	5,330	9,090	10,740	11,950	13,370	12,560	11,020	9,290	5,510	4,010	2,250	99,680
2393 Via Mariposa West	4,130	5,230	7,640	8,390	9,520	10,580	9,820	8,480	8,550	7,290	5,350	3,761	88,741
2394 Via Mariposa West	6,050	7,150	11,110	12,700	14,090	15,800	14,910	13,050	10,960	9,590	7,300	5,227	127,937
2397 Via Mariposa West	6,050	7,220	1,080	10,720	11,980	13,460	12,700	11,070	9,340	8,200	6,290	4,463	102,573
2399 Via Mariposa West	5,310	6,410	8,870	9,590	10,710	12,070	11,510	10,030	8,420	7,270	5,560	3,922	99,672
2400 Via Mariposa West	6,110	7,360	10,390	11,230	12,540	14,130	13,260	11,540	9,700	8,370	6,300	4,509	115,439
3242 San Amadeo	4,510	5,650	8,570	9,670	10,930	12,450	11,840	10,140	8,400	6,860	5,210	3,697	97,927
3243 San Amadeo	5,000	5,800	9,267	8,651	9,125	10,202	10,538	9,025	7,476	6,105	4,637	2,576	88,402
3420 Calle Azul	3,616	4,339	6,164	6,565	7,201	7,819	7,479	6,525	3,051	4,830	3,807	2,687	64,083
5372 Punta Alta	4,750	5,688	8,116	8,395	8,837	10,242	9,860	8,624	7,357	6,384	4,884	3,472	86,609
5510 Paseo Del Lago West	3,447	4,188	6,094	6,595	7,307	8,018	7,564	6,667	5,589	4,566	3,652	2,541	66,228
Total Production of kWh =	59,973	72,065	97,141	114,796	127,070	141,911	135,911	118,191	98,263	83,765	63,690	43,919	1,156,695

(3243 - Jul-Nov 2021): Modem Failure - all solar panes and inverters are operational. Estimated values based on the production from 3242 and the number of solar panels at 3243.

(3420 - Sept 2021): Low production due to SCE power outage and repairs from 9/16 to 10/1

2020 Production													
Third Mutual Project	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Total
2353 Via Mariposa	3,378	8,145	9,186	10,730	13,940	12,100	14,310	13,210	9,590	7,860	6,700	5,560	114,709
2381 Via Mariposa	5,150	6,493	6,816	8,450	12,980	11,260	13,380	12,350	8,820	6,640	5,480	4,050	101,869
2393 Via Mariposa West	5,067	6,794	8,166	9,830	11,690	7,540	8,940	7,120	4,950	5,560	3,560	3,160	82,377
2394 Via Mariposa West	7,064	8,883	10,050	11,760	15,260	13,210	15,690	14,600	10,570	8,620	7,350	5,350	128,407
2397 Via Mariposa West	6,068	7,604	8,603	10,080	13,080	11,370	13,440	12,490	9,080	7,360	6,250	5,230	110,655
2399 Via Mariposa West	5,356	6,763	7,630	8,970	11,690	10,220	12,020	11,160	8,150	6,560	5,510	4,580	98,609
2400 Via Mariposa West	6,159	7,797	8,910	10,490	13,680	11,940	14,070	12,950	9,350	7,500	5,130	3,450	111,426
3242 San Amadeo	4,642	6,160	7,423	8,700	11,380	9,850	11,700	10,700	7,350	5,790	3,270	1,790	88,755
3243 San Amadeo	4,876	5,804	6,880	7,832	9,912	8,431	10,115	10,296	7,362	6,044	5,128	4,383	87,063
3420 Calle Azul	3,805	4,863	5,637	6,500	8,460	7,327	8,861	8,361	5,890	4,794	4,046	3,212	71,756
5372 Punta Alta	4,782	6,646	8,045	8,284	10,751	5,673	8,414	11,525	8,666	7,034	5,402	4,322	89,544
5510 Paseo Del Lago West	3,508	4,514	5,308	4,646	5,995	6,933	7,551	7,754	5,236	4,509	3,625	2,967	62,546
Total Production of kWh =	59,855	80,466	92,654	106,272	138,818	115,854	138,491	132,516	95,014	78,271	61,451	48,054	1,147,716

(2353 - Jan 2020): This was due to 1 out of 3 inverter's wiring harnesses malfunctioning and needing replacement through the manufacturer. Production data was not recorded but estimated based on 2/3 of the production of an identical setup.

2019 Production													
Third Mutual Project													
	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Total
	2353 Via Mariposa	3,368	5,552	8,329	11,520	11,880	10,870	14,370	13,230	10,120	9,850	2,720	107,729
	2381 Via Mariposa	4,951	5,431	8,366	9,418	9,650	8,761	11,590	10,590	8,100	7,920	3,940	93,667
	2393 Via Mariposa West	4,762	5,917	9,176	10,480	11,170	10,230	13,470	12,000	7,267	8,380	4,080	102,002
	2394 Via Mariposa West	6,393	789	8,618	12,420	13,060	11,910	15,680	14,370	10,910	10,800	5,580	117,320
	2397 Via Mariposa West	5,506	6,497	9,682	10,880	11,210	10,250	13,500	12,440	9,480	9,250	4,770	109,305
	2399 Via Mariposa West	4,889	5,796	1,841	X	4,692	7,812	12,100	11,170	8,540	8,240	4,220	74,510
	2400 Via Mariposa West	3,778	5,036	8,142	9,948	11,760	10,790	14,170	12,930	9,830	9,500	4,860	106,684
	3242 San Amadeo	3,856	3,756	8,158	9,671	10,250	9,200	12,000	10,860	8,180	7,510	3,670	91,771
	3243 San Amadeo	4,509	4,952	7,669	8,607	8,162	7,510	8,447	8,849	7,359	7,161	3,832	81,763
	3420 Calle Azul	3,547	4,197	6,116	7,037	7,019	6,540	7,120	7,838	5,803	5,617	3,016	67,649
	5372 Punta Alta	5,133	6,126	9,022	10,380	10,391	9,551	10,742	10,739	7,271	7,731	4,184	96,280
	5510 Paseo Del Lago West	3,287	3,939	5,822	6,766	6,759	6,167	7,837	7,520	5,404	5,424	2,786	65,231
	Total Production of kWh =	53,979	57,988	90,941	107,127	116,003	109,591	141,026	132,536	98,264	97,383	61,415	1,113,911

(2394 - Feb 2019): Replaced power supply due to the power to communication comes on once communication enclosure is opened.

(2399 - Apr 2019): This was due to a conduit becoming damaged after heavy rains.

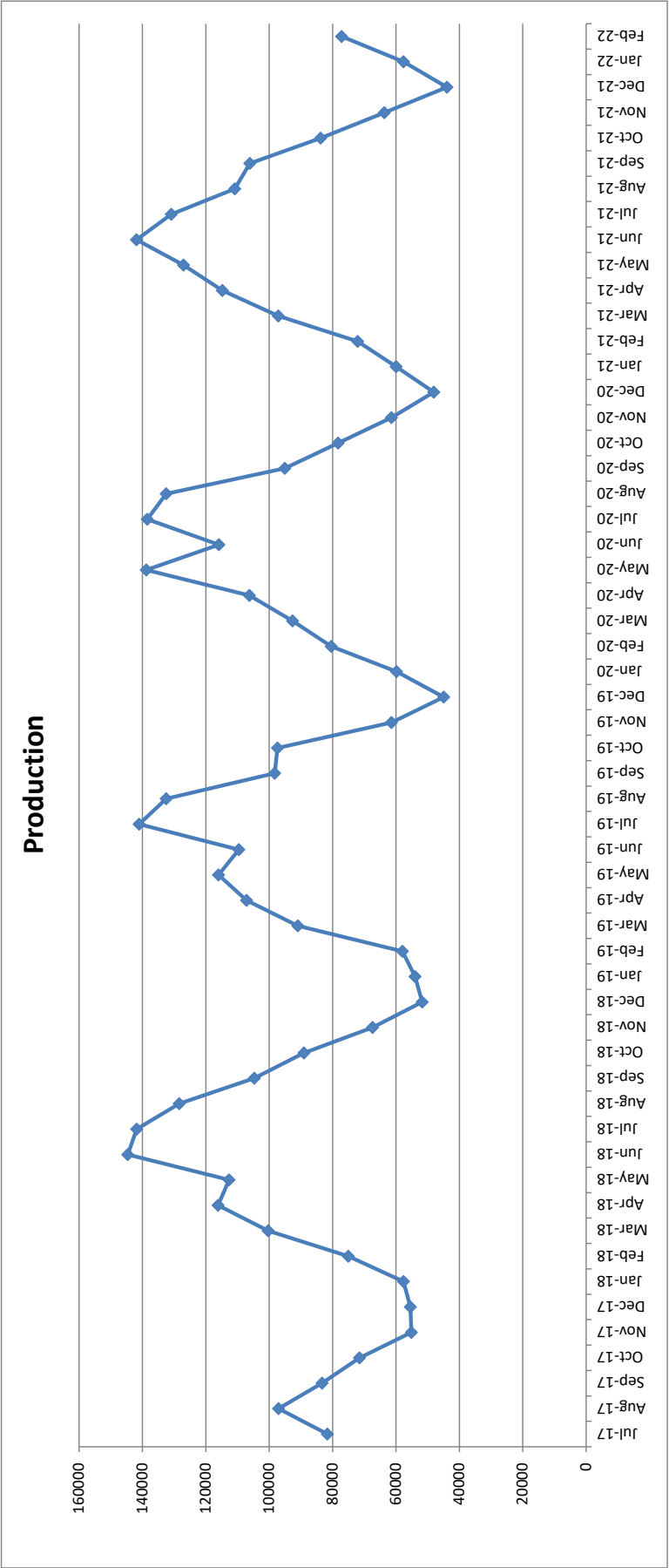
(2353 - Dec 2019): This was due to 1 out of 3 inverter's wiring harnesses malfunctioning and needing replacement through the manufacturer. Production data was not recorded but estimated based on 2/3 of the production of an identical setup.

2018 Production													
Third Mutual Project													
2353 Via Mariposa	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Total
2381 Via Mariposa	5,860	7,790	10,400	12,370	10,730	14,030	13,573	12,057	9,830	8,750	6,630	3,390	115,410
2393 Via Mariposa West	4,730	3,340	6,210	8,130	8,260	10,360	9,905	10,918	9,090	8,040	6,120	4,000	89,103
2394 Via Mariposa West	5,166	6,867	7,876	2,799	10,380	13,260	12,820	11,288	8,970	7,480	5,440	4,440	96,786
2397 Via Mariposa West	5,450	8,840	11,420	13,590	12,130	15,450	14,888	13,236	10,770	9,530	7,260	6,100	128,664
2399 Via Mariposa West	5,590	7,560	9,400	11,660	10,420	13,510	13,295	11,817	9,610	8,350	6,280	5,250	112,742
2400 Via Mariposa West	5,240	6,780	8,680	10,380	9,340	12,030	11,993	10,669	8,680	7,450	5,580	4,640	101,462
3242 San Amadeo	5,990	7,730	10,130	12,060	10,870	14,150	13,794	12,137	9,850	8,540	6,380	4,580	116,211
3243 San Amadeo	4,960	6,340	8,600	10,480	9,570	12,220	12,005	10,177	8,290	6,790	5,090	4,160	98,682
3420 Calle Azul	4,192	5,428	7,896	8,896	7,932	9,953	10,144	9,481	8,054	6,514	5,035	4,278	87,803
5372 Punta Alta	2,016	2,705	5,128	7,581	6,910	8,744	8,736	7,770	6,221	5,212	4,008	3,334	68,365
5510 Paseo Del Lago West	5,296	7,220	8,918	11,074	10,012	12,649	12,412	11,369	9,215	7,392	5,853	4,621	106,031
Total Production of kWh =	3,138	4,451	5,679	7,130	6,098	8,283	8,253	7,509	6,151	4,990	3,747	2,965	68,394
	57,628	75,051	100,337	116,150	112,652	144,639	141,818	128,428	104,731	89,038	67,423	51,758	1,189,653

2017 Production													
Third Mutual Project													
	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
2353 Via Mariposa							7,336	11,749	9,151	8,125	5,756	5,807	47,924
2381 Via Mariposa							X	8,566	5,922	6,211	4,410	5,622	30,731
2393 Via Mariposa West							6,283	8,423	7,967	6,712	4,671	4,157	38,213
2394 Via Mariposa West							1,789	X	2,203	1,029	5,542	5,826	16,389
2397 Via Mariposa West							12,437	11,011	8,431	7,446	5,330	3,627	48,282
2399 Via Mariposa West							6,206	10,194	7,617	6,703	4,770	4,678	40,168
2400 Via Mariposa West							7,282	5,400	8,697	7,668	5,468	5,514	40,029
3242 San Amadeo							11,193	9,736	7,256	6,312	4,341	4,433	43,271
3243 San Amadeo							10,351	9,449	6,901	4,708	3,409	4,397	39,215
3420 Calle Azul							8,381	7,141	5,666	4,971	3,325	3,288	32,772
5372 Punta Alta							2,439	8,332	8,216	7,016	5,004	5,081	36,088
5510 Paseo Del Lago West							7,962	7,090	5,329	4,628	3,110	3,015	31,134
Total Production of kWh =							81,659	97,091	83,356	71,529	55,136	55,445	444,216

(2381 - Jul 2017): Unknown Outage
(2394 - Aug 2017): Unknown Outage

Lifetime Production (kWh)	
	5,186,986
Total 2021 Repair Costs	
	\$0
Recent Panel Cleanings	
	5/22/21, 9/23/21



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STAFF REPORT

DATE: May 2, 2022
FOR: Maintenance and Construction Committee
SUBJECT: Roof Material Comparison

RECOMMENDATION

Receive and file.

BACKGROUND

In February 2022, Maintenance and Construction Committee Chair Engdahl requested that staff research Spray Polyurethane Foam roofing systems as a possible alternative or replacement for the PVC membrane roofing systems currently used by the Mutual.

In 2008, the Maintenance & Construction Committee considered the cool roof options available to replace the flat roof building areas (Attachment 1). The existing flat roof areas were a hot tar built up roofing (BUR) system. There are 1,050 flat roofs in Third Mutual. A roofing consultant provided the following list of cool roof systems for review:

1. PVC Membrane
2. TPO Membrane
3. Hot tar mopped BUR Cap Sheet with Cool Roof Coating
4. Hot tar mopped BUR with Title 24 approved Cool Roof Ballast
5. Status quo

Spray Polyurethane Foam (SPF) was available but was not recommended by the consultant as one of the best options at that time. Subsequently, the Third Board of Directors selected the PVC Membrane cool roof system for the flat roof replacements.

After the 2022 roofing work is completed, a total of 60 percent of the flat roofs in Third Mutual will have been replaced with PVC cool roof materials. The remaining built up roofs are scheduled to be replaced over the next 10 years through 2032.

DISCUSSION

The following summary is based on staff's preliminary review of both PVC and SPF roof systems:

PVC Roofing Pros:

1. Highest reflectivity rating of any Cool Roof system on the market for high energy efficiency of building. Class A Fire Rating.

2. Time tested material has been available for 60 plus years.
3. Provides an option for additional R value to augment the existing attic insulation already in-place.
4. Projected life is 30 plus years.
5. Low maintenance costs, at 5 years maintenance check of penetrations and seams included in re-roof cost, at 10 years a maintenance inspection and roof cleaning are offered at \$0.4 per sf.
6. Ponding water does not affect the warranty. 20-year warranty is valid with or without ponding water areas.

SPF Roofing Pros

1. Foam and Silicone/Acrylic coating provides a seamless roof system.
2. Up to one layer of existing roof can remain in place as the base for the SPF roofing installation.
3. The foam underlayment can last up to 50 years.
4. Qualifies as an energy efficient system.
5. Minimal installation time is required in comparison to other roofing applications.

PVC Roofing Cons

1. Current contract cost of PVC roofing is \$7.25/s.f. to \$8.16/s.f. compared to \$7/s.f. for SPF (based on information available on-line).
2. Cost for 2026 and beyond is unknown as project will need to be re-bid.
3. Requires a manufacturer's certified contractor to retain warranty.

SPF Roofing Cons

1. Silicone/Acrylic and foam are easily punctured. Crows pecking on the roof will damage this system.
2. Installation can only be done when weather is plus 50 degrees F.
3. Overspray claims from foam being carried away by wind during installation process.
4. Few contractors available who install this system and certification is mandatory.
5. Silicone/Acrylic coating resurfacing required every 10 years at a cost of \$3 to \$4/sf.

FINANCIAL ANALYSIS

To calculate the life cycle cost for each system, the maintenance required for both systems at year 10 was added to the initial cost. At this age of the life cycle, SPF calculates to be 1.4 times the cost of PVC. At 20 years SPF jumps to 1.8 times the cost of PVC and at 30 years SPF will cost 2.2 times the cost of PVC system.

Prepared By: Erik Schneekluth, Project Manager

Reviewed By: Guy West, Projects Division Manager
Baltazar Mejia, Maintenance and Construction Assistant Director
Manuel Gomez, Maintenance and Construction Director

ATTACHMENT(S)

Attachment 1 – M&C Staff Report from 2008

Attachment 2 – Letter from Dave Bienek

Third Laguna Hills Mutual

Program Options for Flat Roof Re-Roofing

DATE: November 18, 2008

FOR: Third Mutual
Board of Directors

SUMMARY / RECOMMENDATION

This report has been prepared in response to the request from Third Mutual Maintenance and Construction Committee for information on cool roof systems.

BACKGROUND INFORMATION

Third Mutual has 1,405 residential, laundry, and carport buildings with a total of 2,325 separate roof systems. The number of roof systems in Third Mutual by roof type is as follows:

Flat Built-up Membrane (BUR)	- 1,050
Original Tile (TI)	- 392
Lightweight Tile (LWT)	- 376
Eagle Capistrano Tile (ECT)	- 96
Eagle Malibu Tile (EMT)	- 283
Metal Tile (MT)	- 110
Composition Shingle (CS)	- 12
Total	- 2,325 roof systems

Re-roof work currently being completed in Third Mutual is on the Flat Built-up Membrane (BUR) roofs, Composition Shingle (CS) roofs, and Original Tile (TI) roofs only. The Lightweight Tile (LWT) and Metal Tile (MT) roofs were completed in the 1990's and are not scheduled to be re-roof candidates again until the 2030's.

The BUR roof systems are prioritized for re-roof by inspecting at roof age year 15 and determining the leak history of each building. Each building is then given a number grade based on the visual inspection, leak history and age and prioritized for re-roofing. The roofs with the highest score are part of the next year's re-roof program. Lower scored buildings typically have not had any leaks and are deferred and reassessed the next year until they are scored high enough to qualify for a re-roof. BUR roofs are typically re-roofed in roof age year 16 to 20.

The CS roof systems are inspected at roof age year 19 and prioritized for re-roof based on the grade received for the roofs age, leak history and visual inspection. The highest scored buildings are part of the next year's re-roof program. Lower scored buildings typically have not had any leaks or other reported damage and are deferred and reassessed the next year until they are scored high enough to qualify for a re-roof. The CS roofs are typically re-roofed in roof age year 20 to 24.

The Original Tile (TI) roofs refer to buildings that were constructed with tile roofs during the initial construction of the building. Three types of TI roofs were used, Monier concrete tile, 1 piece clay S tile and 2 piece clay S tile. The TI roofs have been found to have deficiencies

with the under-layment paper and all these TI roofs are being replaced. The program is currently in year 4 of a 12 year replacement schedule. These TI roofs are being converted to Eagle Capistrano (ECT) or Eagle Malibu (EMT) Tile systems. These roofs are prioritized for replacement based on age, leak history, visual inspection and building type.

The building industry is moving towards green eco/energy friendly systems. This trend has been implemented in the building code for commercial buildings with the requirement for *Cool Roof Systems* in the Title 24 update. Cool Roof materials are available for sloped and flat roof applications, but are predominately used on flat roofs. Cool Roofs are not presently required by the building code for residential buildings, but the code will be changing in 2009 for **new** residential construction as part of the California Title 24 update. There has not been any indication as to when/if the code will be changed to include re-roofs to existing residential buildings.

A Cool Roof is basically a roofing system that instead of absorbing the heat from the sun reflects it, and thus requires less energy to cool that building. Testing completed by industry experts for the California Energy Commission has been completed to show a 50-degree + surface temperature decrease with cool roof systems compared against standard roofing materials. A cooler roof surface means less heat penetration into the building and thereby less energy to cool the building. Additional information on cool roofs can be found at the **Cool Roof Rating Council (CRRC)** website via the internet at www.coolroofs.org. This site provides a link to the website for California Energy Commission Building Energy Standards (California Title 24). It is California Title 24 that sets the definition of a cool roof and that definition is based on the ratings established by the CRRC.

The roof is just one component of the building envelope that can incorporate this technology. A building's walls, windows, and doors as well as insulation would also need to be assessed and updated to fully comply with the Cool Building programs. **This report is limited to discussion of roofing materials for flat roofs.**

ANALYSIS / ALTERNATIVES

The BUR roof replacement system materials currently being used will be presented below and alternative materials are also presented below with an assessment of pros and cons of each provided. Any cost deviation from the current materials will also be provided. After detailing all this information, the alternatives will spell out possible new options for the re-roof program for flat roofs.

BUR FLAT ROOFS

The building code currently allows roof replacement on flat roofs with in-kind materials. For Laguna Woods Village, this equates to a multilayer hot mopped membrane with a final layer of aggregate or cap sheet. Parapet walls, skylight curbs and Cupola walls are roofed in with a hot mopped layered membrane and a final layer of cap sheet; galvanized metal is used for all vent flashings.

There are several Cool Roof systems available and four are reviewed in this report. They are as follows: PVC Membrane, TPO Membrane, hot mopped BUR Cap Sheet with the cool roof

coating applied at the factory or in the field, and hot mopped BUR with Title 24 approved ballast.

The **PVC Membrane (Polyvinyl Chloride)** is a single layer 50 to 60 mil thick membrane containing ultraviolet light stabilizers, flame retardant, and reinforcement. The color of the membrane is white. A 1/4 inch thick protection board applied to the roof substrate is required with this type of roof. The roof membrane comes in 5 feet to 10 feet wide rolls and the joints are hot air heat welded together on the roof making the membrane monolithic. The bonding mechanism of the membrane to the protection board is with a mechanical fastener screwed thru the membrane to the deck at the membrane edges. The edges are then covered with the next section of membrane covering the fastener, and this seam is hot air welded together. All roof and plumbing vent penetrations as well as skylight curbs are flashed with industry standard metal materials and then covered with the PVC material and require PVC compatible specific sealants.

The published warranty of this system is 20 years; industry experts suggest a 30+ year life but there is no published data to this effect yet. Therefore, for this report the assumed re-roof schedule will be at year 25.

Use of the PVC membrane will allow for the elimination of hot tar during the re-roof process. This will eliminate hot tar drips, spills and smell issues. The main benefit of this system is the cooling effect to the roof deck. The main negative for this system is once it is installed, resident alteration installations (washer/dryer vents, skylights, solo-tubes, AC units, and/or room additions) must be policed to ensure the materials used by the alteration contractor are compatible with this system. Standard roofing materials are not compatible and are actually detrimental to the PVC system and will cause the membrane to fail.

Using the PVC system will require an increase to the flat roof replacement budget by about an additional 77 percent. Alterations would also be required to be re-roofed with this material and residents would be billed accordingly.

PVC Membrane Unit Rate	\$5.575/sf
2009 Square Footage of Roofing to be replaced	428,438 sf
Status Quo 2009 BUR Budget	\$1,347,804
2009 Budget if PVC Membrane is used *	\$2,388,495
Required increase to 2009 Budget for PVC	\$1,040,691
Average Annual Cost for Comparison/100 sf	\$22.40/100 sf
* No cool roof material included on Carports	Life 25 years

The additional cost for this project would be appropriated from the Replacement Fund. The impact of these planned expenditures would be included in the next 30-year Replacement Reserve 30-Year Funding Plan and would likely result in higher reserve contributions.

The **TPO Membrane (Thermoplastic Polyolefin)** is a single layer 50 to 60 mil thick membrane system that is similar to the PVC membrane but is not as rigid as the PVC system. The finished product is like a rubberized mat. This system requires a 1/4" protection board sub-

layer. The roof membrane comes in 6 feet to 12 feet wide rolls and the joints are heat welded together on the roof to create a monolithic membrane. The bonding mechanism of the membrane to the protection board is with a mechanical fastener screwed thru the membrane to the deck at the membrane edges. The edges are then covered with the next section of membrane covering the fastener and this seam is hot air welded together. Standard metal flashing materials are used with TPO system and covered with the TPO membrane and sealed with TPO compatible specific caulking and sealants.

The published warranty of this system is 15 years with the anticipation of a re-roof at year 20. The TPO system will allow for the elimination of hot tar during the re-roof process. This will eliminate hot tar drips, spills and smell issues. The main benefit of this system is the cooling effect to the roof deck. Policing alteration installations for compatible materials is of concern with this system, as non-compatible materials will cause the membrane to fail.

Using the TPO system will require an increase to the flat roof replacement budget by an additional 68 percent. Alterations would also be required to be re-roofed with this material and residents would be billed accordingly.

TPO Membrane Unit Rate	\$5.268/sf
2009 Square Footage of Roofing to be replaced	428,438 sf
Status Quo 2009 BUR Budget	\$1,347,804
2009 Budget if TPO Membrane is used *	\$2,257,315
Required increase to 2009 Budget for PVC	\$909,511
Average Annual Cost for Comparison/100 sf	\$26.37/100 sf
* No cool roof material included on Carports	Life 20 years

The additional cost for this project would be appropriated from the Replacement Fund. The impact of these planned expenditures would be included in the next 30-year Replacement Reserve 30-Year Funding Plan and would likely result in higher reserve contributions.

The **BUR Cap Sheet with factory or field applied Cool Roof Coating** is a hot mopped multilayer system. This system is similar to what is being done with the current specification minus the final layer. The current spec calls for a final layer of aggregate or cap sheet; this system has a final layer of cap sheet with the cool roof coating applied to it. This system uses hot tar and all the flashing details presently being used. The warranty for this system is 10 years with the anticipation of a re-roof at year 16.

Alteration installations would proceed as they are currently being done. Outside contractors can tie into this material with standard roofing materials. The main benefit of this system is the cooling effect to the roof deck.

Using the BUR Cap Sheet with Cool Roof Coating system will require an increase to the flat roof replacement budget by an additional 24 percent. Alterations would also be required to be re-roofed with this material and residents would be billed accordingly.

BUR Cap Sheet Unit Rate	\$3.901/sf
2009 Square Footage of Roofing to be replaced	428,438 sf
Status Quo 2009 BUR Budget	\$1,347,804
2009 Budget if BUR Cap Sheet is used *	\$1,671,380
Required increase to 2009 Budget for PVC	\$323,576
Average Annual Cost for Comparison/100 sf +	\$30.11/100 sf
* No cool roof material included on Carports	Life 16 years

+ This system includes a recoating of the membrane at year 8

The additional cost for this project would be appropriated from the Replacement Fund. The impact of these planned expenditures would be included in the next 30-year Replacement Reserve 30-Year Funding Plan and would likely result in higher reserve contributions.

The **Hot Mopped BUR with Title 24 Approved Ballast** is a hot mopped multilayer system. This system is what is being done with the current specification except a different aggregate is used for the final layer. The current spec calls for a final layer of aggregate or cap sheet. This system has a final layer of Title 24 approved ballast. This system uses hot tar and all the flashing details presently being used. The warranty for this system is 10 years with the anticipation of a re-roof at year 16. **This system is not approved at this time, but the Industry is in the process of testing this system to develop a system that will comply with Title 24 requirements.**

Alteration installations would proceed as they are currently being done. Outside contractors can tie into this material with standard roofing materials. The main benefit of this system is the cooling effect to the roof deck.

Using the BUR with Title 24 approved ballast system will require an increase to the flat roof replacement budget by an additional 18 percent. Alterations would also be required to be re-roofed with this material and residents would be billed accordingly.

BUR Title 24 Ballast Unit Rate	\$3.696/sf
2009 Square Footage of Roofing to be replaced	428,438 sf
Status Quo 2009 BUR Budget	\$1,347,804
2009 Budget if BUR Cap Sheet is used *	\$1,583,927
Required increase to 2009 Budget for PVC	\$236,123
Average Annual Cost for Comparison/100 sf	\$23.11/100 sf
* No cool roof material included on Carports	Life 16 years

The additional cost for this project would be appropriated from the Replacement Fund. The impact of these planned expenditures would be included in the next 30-year Replacement Reserve 30-Year Funding Plan and would likely result in higher reserve contributions

The current flat roof system being used is a **Hot Mopped BUR with Aggregate** that is a hot mopped multilayer system. The current specifications call for a final layer of aggregate or cap sheet. This system uses hot tar and all the flashing details presently being used. The warranty for this system is 10 years with the anticipation of a re-roof at year 16.

Alteration installations would proceed as they are currently being done. Outside contractors can tie-in to this material with standard roofing materials.

BUR Unit Rate with Status Quo Material	\$3.15/sf
2009 Square Footage of Roofing to be replaced	428,438 sf
Status Quo 2009 BUR Budget	\$1,347,804
Average Annual Cost for Comparison/100 sf	\$19.61/100 sf

Alternative One: BUR Roofs - Implement Change to Cool Roof Material

If this alternative is selected, the BUR re-roof program specification will be changed to one of the Cool Roof systems described above. The change will require an increase to this program of 18 to 77 percent depending on which system is selected. The change could be made with the 2009 scheduled roofing work. A summary of the extra funding required for each system and the average annual cost per year for each system is summarized in the table below.

	PVC	TPO	BUR Cap Sheet	BUR Title 24 Ballast	Status Quo Hot Mopped BUR w/Agg
Additional funding required in 2009	\$1,040,691	\$909,511	\$323,576	\$236,123	\$0
Avg Annual Cost/ 100 sf	\$22.40/100 sf	\$26.37/100 sf	\$30.11/100 sf	\$23.11/100 sf	\$19.61/100 sf

Residents will be billed for their alteration re-roofs with whichever system is selected. The cost impact to residents with alterations will be proportional to the impact to the Mutual.

When the Average Annual Cost calculation is considered, the PVC roof at \$22.40/100 sf appears to be the most cost effective Cool Roof option. However, due mainly to the concern that unauthorized alterations will be performed that will damage the PVC roof, Staff believes that the BUR with Title 24 Approved Ballast at \$23.11/100 sf will be the better Cool Roof option for the residential buildings in Laguna Woods Village when this system is eventually rated to comply with the Title 24 requirements.

Alternative Two: Status Quo

If this alternative is selected, no changes to the roofing program will be implemented at this time. The current building code specifications will continue to be followed. When the building code changes to require any of the items discussed within this report, the changes will be implemented at that time. Staff will advise the Board in place at that time of the required changes to the roofing program.

Prepared By: Erik T. Schneekluth, Projects, Paving/Roofing Supervisor *ETS*

Reviewed By: Marcel Bradley, Projects Manager *MB*
 Jerry Storage, Maintenance and Security Director *JS*
 Betty Parker, Budget and Financial Planning Manager *BP*
 Janet Price, Finance and Administration Director

Attachment 2 - Letter from Dave Bienek (2 pages)

From: Dave Bienek

Sent: Wednesday, February 16, 2022 5:36 AM

To: Ralph Engdahl

Subject: FW: Learn why spray polyurethane foam makes the most sense when it comes to commercial roofing projects.

Good morning Ralph,

Here is some of the info we talked about last night.

I would love to go into more detail when you have some time.

Looking forward to talking with you.

Dave Bienek

Subject: Learn why spray polyurethane foam makes the most sense when it comes to commercial roofing projects.

Learn why spray polyurethane foam makes the most sense when it comes to commercial roofing projects.

Jonathan B. Sherwood | Aug 16, 2021

We all know that spray polyurethane foam (SPF) and thermoplastic polyolefin (TPO) are among the most widely used roofing systems for commercial and industrial buildings today. We know that currently TPO wins the popularity contest, is considered more “aesthetically pleasing” (although beauty is, as they say, in the eye of the beholder) and, for some architects and roofing contractors, is almost a tradition. TPO also—at first glance—seems to be the most economical.

But is it really?

As a seasoned entrepreneur, roofing specialist—and owner of SherFire Seamless Systems and Roofers Helping Roofers—I have over a decade’s experience with commercial low-slope roofs, specializing in large commercial/industrial buildings and apartment complexes. In a head-to-head match-up between TPO and SPF, I’ll take SPF nearly every time.

WATER IS NOT OUR FRIEND

SPF is waterproof—as opposed to just water-shedding (like TPO). Why does that matter? It’s all about preventing water damage beneath the roof system. Because SPF is a closed-cell foam that cures into a plastic, it doesn’t allow—in the vast majority of cases—moisture intrusion or damage to the interior beneath the roofline. That’s one of the reasons SPF and Coating Systems warranties protect against standing water. TPO warranties don’t.

Roofingfoam.jpegFEWER CHANCES TO FAIL

TPO roofing has seams and fasteners; in short, it has a myriad of opportunities to fail at its main job of keeping out water. Because SPF is monolithic (a fancy way of saying “seamless”), self-flashing and custom-fitting, it’s basically component-less.

The more components, the more chances for the dreaded water intrusion. TPO has lots of components.

THE VALUE OF “R”

The R-value is the way a material’s thermal resistance—or energy efficiency—is measured, and it’s considerably higher (which means better) for SPF than TPO. Even with the ISO board typically used with TPO, the R-Value is only about 5.5 per inch. SPF’s R-value is approximately 6.9 per inch. That’s better. It’s also more cost-effective and—depending on the state you live in—energy star rated coatings used on the SPF to protect it from the sun may even qualify you for tax credits. Which makes SPF even more valuable.

EASIER TO FIX, CHEAPER TO MAINTAIN

SPF—with its fewer (as in “zero”) components—has fewer chances to fail than TPO, which means less of a chance it’ll need repair. When something does go wrong, the fix for an SPF is often as simple as recoating the affected area. With a TPO roof, it can be much more complicated. There can be welding involved. It can get expensive.

Maintenance to an SPF roof is also much simpler than with a TPO and is considered “preventative maintenance.” Most municipalities don’t require permits for SPF restorations, as there’s usually not the resultant debris to haul off to the landfill. As far as I know, South Florida is one of the only places where you’ll need a permit, but that’s only for the initial SPF restoration.

The above are just a few of the reasons I’ll almost always recommend SPF roofing over TPO. It’s also up to 50% quicker to install/apply, more durable, and can be covered by a 20-year full-system warranty for less than a comparable warranty for a TPO roof.

More cost-efficient; easier to repair and maintain and more durable. When you weigh all the evidence, I’ll put my money on SPF nearly every time

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