Renovate or Replace?

Considerations in the Selection of Renovating a Native Soil Field vs. Replacing with Synthetic Turf

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Presentation Points

- Making you and your project successful
- Evaluate your options/Where are you now?
- What do you have now? Comprehensive field assessment
- Who's using the field? What for? How will that change?
- Comparative Analysis of Improvement Options
- Cost Recovery Opportunities
- Ensuring Your Success
- Questions?

How can you be successful?

- Deliver the project on time, on budget, and exceed expectations on quality of field
- Provide a field the owner and users will be proud of
- Provide a field that can be properly maintained
- Match the field with the level of play and use
- Provide a field that is "successful" for many years after its completion
- Position you as a mentor for others for the same process

What are your options and opportunities?

- Current Natural Turf Field makeup
- Stay with same turf blend? Change to new turf type?
- Synthetic turf options: Knitted vs. Infill Turf
- Are infrastructure improvements needed?

How can you achieve success?

- Expectations must be in line with project parameters, i.e., project budget, timeline, annual staffing and maintenance

- If the expectations don't align with the project parameters, then chances of success are not high

- When do you call in a Design Professional?

What outside influences can impact your choices?

- "Keeping up with the Joneses'"
- Water Issues
- Environmental and Health Issues/Concerns
- Future budget/staffing
- Expectations of use and quality of "new" field

What is the current state of the field?

- A Comprehensive Field Assessment investigates:
  - Surface Condition
  - Soil Structure (i.e., permeability, soil makeup, agronomical nutrient analysis)
  - Condition of Infrastructure (typically limited to drainage and irrigation systems)
  - Applicability of turf type for level and type of play on the field
- Final Report should include:
  - Recommendations and Implementation Plan
  - Cost estimates

Who is using the field? What for?

A Comprehensive Needs Assessment quantifies:

- Types of users: Ages and levels of competition
- Types of events
- Field sizes
- Frequency of events
- Number and types of fields currently in use; whether the current demand is met; and projections for future needs
- End Users
  - Who are they?
  - What do they want?
  - Gain input from public forums, workshops, field trips

Improvement Comparison

Field Area = approximately 2 acres (±85,000 SF)

Recondition	**Renovation**	**Reconstruction**
- Minor field reconditioning - No significant grading/ infrastructure upgrades	- Minor field renovation - No underground infrastructure upgrades	- Full field reconstruction - With underground infrastructure upgrades
Budget: $0.25/s.f. $20-25,000	**Budget:** $1.25/s.f. $100-115,000	**Budget:** $3.50/s.f. ≈ $300,000
Schedule: Minimum 4 weeks Recommended 8-12 weeks for grass maturation	**Schedule:** Minimum 6 weeks Recommend 8-16 weeks for grass maturation	**Schedule:** Minimum 12 weeks Recommended 16-20 weeks for grass maturation

(See Sheet at end of Presentation Packet for detailed list of improvements for each option)

Improvement Comparison

Field Area = approximately 2 acres (±85,000 SF)

Transition to Sand-Based Turf

Full field reconstruction with underground infrastructure improvements

Budget:

$7-$13/s.f.

$600,000-$1.1 million

Schedule:

Minimum 20 weeks

Recommend 30 weeks for grass maturation

Transition to Synthetic Turf

Full field replacement with underground infrastructure improvements

Budget:

$9-$11.50/s.f.

$750-975,000

Schedule:

8-12 weeks

(See Sheet at end of Presentation Packet for detailed list of improvements for each option)

Field Construction & M&O Costs

Natural vs. Synthetic Turf Field Comparisons

Based on an approx 2 acres (85,000 s.f.) field area	Natural Grass Turf	Sand Based Grass Field	Infill Synthetic Turf
Construction			
Unit (per square foot) Construction Cost (see below for breakdown of work involved)	$ 3.50	$ 10.00	$ 10.50
Initial Installation Cost	$297,500	$850,000	$892,500
15% Contingency on Construction	$44,625	$127,500	$133,875
Total Cost of Construction	**$342,125**	**$977,500**	**$1,026,375**
Annual Maintenance			
Mowing (assume 2 Ac per hr/wk)	$4,500	$4,500	$0
Irrigation Repair	$1,500	$1,500	$0
Irrigation Head Replacement	$500	$500	$0
Annual Turf Repair and Striping	$1,500	$1,500	$500
Overseed @ $3500 per application (two annual applications)	$7,000	$7,000	$0
Aeration @ $2000 per session (4 times per year)	$8,000	$8,000	$0
Top Dressing (2 times)	$9,000	$9,000	$0
Fertilization Materials	$4,000	$8,000	$200
Water Use Costs	$7,600	$15,200	$70
Labor Costs:			
Debris / Trash pick up on syn. Turf field (labor cost estimate)	$ -		$ 5,500
Field Grooming 1 acre / hour (6 x per year)	$ -	$ -	$ 1,500
Estimated Annual Maintenance Cost	$ 43,600	$ 55,200	$ 7,770

Field Option Life Cycle Comparison

Life Cycle Cost Comparison	Natural Grass Turf	Sand Based Grass Field	Infill Synthetic Turf
Year 1 Construction	$ 342,125	$ 977,500	$ 1,026,375
Maintenance	$ 43,600	$ 55,200	$ 7,770
Year 2 previous year plus 4%	$ 45,344	$ 57,408	$ 8,081
Year 3 previous year plus 4%	$ 47,158	$ 59,704	$ 8,404
Year 4 previous year plus 4%	$ 49,044	$ 62,092	$ 8,740
Year 5 previous year plus 4%	$ 51,006	$ 64,576	$ 9,090
Minor Field Renovation (at $1.25 / sf for natural turf only)	$ 106,250	$ 106,250	$ -
Year 6 previous year plus 4%	$ 53,046	$ 67,159	$ 9,453
Year 7 previous year plus 4%	$ 55,168	$ 69,846	$ 9,832
Year 8 previous year plus 4%	$ 57,375	$ 72,639	$ 10,225
Year 9 previous year plus 4%	$ 59,670	$ 75,545	$ 10,634
Year 10 previous year plus 4%	$ 62,056	$ 78,567	$ 11,059
Minor Field Renovation (at $1.25 / sf for natural turf only) and Synthetic Turf Product Replacement (estimated at $6.00/s.f. for syn. Turf disposal and replacement)	$ 106,250	$ 106,250	$ 510,000
10 Year life cycle cost	**$ 1,078,091**	**$ 1,852,737**	**$ 1,629,662**
Annual Water Used (based on average use of maintained native clay-based soil and USGA sand-based field) - in gallons**	$ 1,420,000	3,887,091	
Acre Feet per year use.	4.36	11.93	
Estimated Days of Use Per Year (365 less maintenance, less rain)	265	320	360
Cost per day of availability based 10 yr life cycle cost	**$407**	**$579**	**$453**
COST PER HOUR OF AVAILABILITY TO PLAY SPORTS			
Hours / day OK for sustained naturf turf w/ regular typical use (assumed avg. # of daylight hrs available for play on syn. Turf)*	5.0	5	9.0
Annual hours available	1,325	1,600	3,240
Cost per hour of play	**$81**	**$116**	**$50**

* Assumes Synthetic field is lighted for an 8:00 AM to 10 PM availability

** The above does NOT include any PRE-use or POST watering of the synthetic turf field that may be desired in warmer climates

How can you recover costs?

- Field Rental (especially if lighted)
- Use fees
- Partnering Opportunities
- Outside funding mechanisms
  - Grants
  - Donations
- Future capital outlay planning

You've succeeded!

- A project completed on time, on budget, and that exceeds expectations for quality of field
- A field the Owner and Users can enjoy and be proud of
- A field that can be properly maintained at reasonable cost
- A field the meets use and level of play goals
- A field that will be "successful" for many years after its completion

You're recognized as the "go to" person to mentor others through the same process

Questions and Comments?

Thank you for attending this session and the 20th STMA Conference.

Enjoy the Bay Area!

If you have any additional questions,

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Field Improvements – Detailed List of Work

Reconditioning

Minor field reconditioning with no significant grading or infrastructure improvements, including:

- Deep Tine Aeration
- Dragging/Top Dressing
- Minor field leveling
- Drill seeding
- Fertilizing

Renovation

Minor field renovation with no underground infrastructure improvements, including:

- Kill & disk turf
- Minor field grading only
- Incorporate soil amendments
- Minor irrigation system work, (including replace heads and old valves)
- Sod field and fertilize turf

Reconstruction

Full field reconstruction with underground infrastructure improvements, including:

- Kill & Strip Turf
- Significant field grading
- New drainage system, including in-field slit sand (or equivalent) drainage system
- New irrigation system with control package
- Rebuild soil profile
- Sod field and fertilize turf

Field Improvements – Detailed List of Work

Transition to Sand-Based Turf

Full field reconstruction with underground infrastructure improvements, including:

- Remove turf & soil profile
- Significant field grading/Mass excavation
- New drainage system with in-field subdrain system
- New irrigation system with control package
- Rebuild soil profile (either amended soil or sand-based)
- Sod field and fertilize turf

Transition to Synthetic Turf

Full field replacement with underground infrastructure improvements, including:

- Removal of turf and organic material
- Field grading/soil excavation
- New subsurface drainage system
- New perimeter watering system
- Porous base section
- Synthetic turf

Needs Assessment - Example

Football

American Football Field	160' (53.3 yds)	300' (100 yds)	

Soccer

Youth Field	Sizes vary	Sizes vary	Field sizes vary and are at the discretion of the particular region. However, post season play should conform to FIFA Laws of the Game Requirements, including the size being no less than 300' x 150'.
U6			
U8	120' (40 yds)	180' (60 yds)	
U10	150 (50 yds)	240' (80 yds)	
U12	180' (60 yds)	300' (100 yds)	
U14	220' (73.3 yds)	330' (110 yds)	
U16	220' (73.3 yds)	330' (110 yds)	
U19	220' (73.3 yds)	345' (115 yds)	
Adult	225' (75 yds)	360' (120 yds)	Field dimensions not to exceed this size.

Lacrosse

Standard Size	180' (60 yds)	330' (130 yds)	Women's field has no out-of-bounds

Needs Assessment – Example

U 14/U 19 Soccer Game Field Needs 110 yds x 60yds	
Soccer Players	557
Total Players in a given week	557
Total Number of Teams	35
2 teams per game	17.5
Assume 1 game at 1 hour per week	1
Total Hours of Games	17.5
Assume 8 - 4 Sat.	8
Availability of a Single Field Per Week	8
fields required for soccer	**2.2**
Total Fields Required for Current Participation	**2.2**
Existing Quantity of School Game Fields	**1.0**
Existing Quantity of City Game Fields	**2.0**
Current Unmet Program Demand	**-0.8**
To be built 1-5 years out	
Anticipated Growth 2005	763
Required # of fields to be built 2 - 3 years out	**2.0**
Percent increase	37%
Anticipated Growth 2010	1184
Required # of fields to be built 4 - 8 years out	**1.7**
Percent increse	55%

Needs Assessment - Example

Football & Cheerleading		YSAT Based Data				Census Based Data			Historical Based Data		
	Age Group	Current Need	2005 Need	2010 Need	Total	2005 Need	2010 Need	Total	2005 Need	2010 Need	Total
	All Ages	0.0	0.4	0.0	0.4	0.2	0.1	0.3	-0.3	-0.4	-0.7
Subtotal		0.0	0.4	0.0	0.4	0.2	0.1	0.3	-0.3	-0.4	-0.7

Girls Softball		YSAT Based Data				Census Based Data			Historical Based Data		
	Age Group	Current Need	2005 Need	2010 Need	Total	2005 Need	2010 Need	Total	2005 Need	2010 Need	Total
	4 to 10	-4.7	-4.0	-4.0	-12.7	-4.2	-4.0	-8.1	-3.4	-0.9	-4.3
	11 - 15+	-2.1	-1.3	-0.5	-4.0	-1.9	-1.8	-3.7	-1.8	-1.5	-3.4
Subtotal		-6.8	-5.4	-4.6	-16.7	-6.1	-5.8	-11.8	-5.3	-2.4	-7.6

Soccer		YSAT Based Data				Census Based Data			Historical Based Data		
	Age Group	Current Need	2005 Need	2010 Need	Total	2005 Need	2010 Need	Total	2005 Need	2010 Need	Total
	U6	-0.5	2.9	6.1	8.5	0.9	0.6	1.5	2.6	4.5	7.1
	U8	-0.1	3.8	2.3	6.0	3.5	0.3	3.7	3.8	1.2	5.1
	U9 & U10	-1.5	3.3	2.0	3.9	3.0	0.2	3.3	3.1	0.8	3.9
	U12	-0.4	2.2	1.3	3.1	2.0	0.1	2.1	2.1	0.7	2.8
	U14 & U19	-0.8	2.0	1.7	2.8	1.7	0.2	1.8	1.9	1.2	3.1
Subtotal		-3.3	14.2	13.4	24.3	11.0	1.4	12.4	13.6	8.5	22.0

Needs Assessment - Example

Sport	Field Size	Field Area	Safety	Spectator	Concessions	Storage	Parking	Space Contingency	Total SF Use Need	Total Acreage Need
L.L. Baseball <5	Any	10,000	7,500	2,500	100	100	6,000	7,860	34,060	0.8
L.L. Baseball 6 & 7	50'x120'	11,310	7,500	2,500	100	100	6,000	8,253	35,763	0.8
L.L. Baseball 8 & 9	50'x145'	16,512	7,500	2,500	100	100	6,000	9,814	42,526	1.0
L.L. Baseball 10 - 12	60'x220'	38,000	7,500	2,500	100	100	6,000	16,260	70,460	1.6
L.L. Baseball 13 & 14	90'x330'	85,530	7,500	2,500	100	100	6,000	30,519	132,249	3.0
L.L. Baseball 15 & 16	90'x350'	96,211	7,500	2,500	100	100	6,000	33,723	146,134	3.4
B.R. Baseball 4 - 12	60'x220'	38,000	7,500	2,500	100	100	6,000	16,260	70,460	1.6
B.R. Baseball 13 - 18	90'x396'	123,162	7,500	2,500	100	100	6,000	41,809	181,171	4.2
Girls Softball 4 - 10	60'x175'	24,052	7,500	2,500	100	100	6,000	12,076	52,328	1.2
Girls Softball 11 - 15+	60'x200'	31,415	7,500	2,500	100	100	6,000	14,285	61,900	1.4
Football & Cheerleading	160'x360'	57,600	13,500	2,500	100	100	6,000	23,940	103,740	2.4
Soccer U6	90'x150'	13,500	13,500	2,500	100	100	6,000	10,710	46,410	1.1
Soccer U8	120'x210'	25,200	13,500	2,500	100	100	6,000	14,220	61,620	1.4
Soccer U10	150'x240'	36,000	13,500	2,500	100	100	6,000	17,460	75,660	1.7
Soccer U12	180'x300'	54,000	13,500	2,500	100	100	6,000	22,860	99,060	2.3
Soccer U14 - U19	180'x330'	59,400	18,000	2,500	100	100	6,000	25,830	111,930	2.6