

Agronomic Solutions I: Rebuilding and Renovating Your Greens



BMPs of Greens Renovation



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Professional Experience:

- Bachelor of Landscape Architecture
University of Illinois - 1988
- Dick Nugent Associates
Project Architect 1988 to 1990
- Wadsworth Golf Construction
Project Supt: 1990 - 2000
Vice President 2000 - 2010
President 2010 - Present
- Have worked on over 70 Projects in 25 States

Professional Affiliations:

- GCBA - Board of Directors
- GCSAA - Class A Member
- ASLA - Active Member



BMPs of Greens Renovation

Reasons to Renovate

Agronomic

Economic

Playability

GOLF COURSE ITEMS EXPECTED LIFE CYCLE

HOW LONG SHOULD PARTS OF THE GOLF COURSE LAST?

ITEM	YEARS	ITEM	YEARS
Greens (1)	15 – 30 years	Cart Paths – concrete	15 – 30 years
Bunker Sand	5 – 7 years	Practice Range Tees	5 – 10 years
Irrigation System	10 – 30 years	Tees	15 – 20 years
<i>Irrigation Control System</i>	<i>10 – 15 years</i>	Corrugated Metal Pipes	15 – 30 years
<i>PVC Pipe (under pressure)</i>	<i>10 – 30 years</i>	Bunker Drainage Pipes (3)	5 – 10 years
<i>Pump Station</i>	<i>15 – 20 years</i>	Mulch	1 – 3 years
Cart Paths – asphalt (2)	5 – 10 years (or longer)	Grass (4)	Varies

NOTES: (1) Several factors can weigh into the decision to replace greens: accumulation of layers on the surface of the original construction, the desire to convert to new grasses and response to changes in the game from an architectural standpoint (like the interaction between green speed and hole locations). (2) Assumes on-going maintenance beginning 1 – 2 years after installation. (3) Typically replaced because the sand is being changed — while the machinery is there to change sand, it's often a good time to replace the drainage pipes as well. (4) As new grasses enter the marketplace — for example, those that are more drought and disease tolerant — replanting may be appropriate, depending upon the site.

Component life spans can vary depending upon location of the golf course, quality of materials, original installation and past maintenance practices. We encourage golf course leaders to work with their golf course architect, superintendents and others to assess the longevity of their particular course's components.

ASGCA thanks those at the USGA Green Section, Golf Course Builders Association of America, Golf Course Superintendents Association of America and various suppliers for their assistance in compiling this information.

The materials presented on this chart have been reviewed by the following Allied Associations of Golf:

For more information,
contact ASGCA at

262-786-5960 or
www.asgca.org



BMPs of Greens Renovation

Agronomic

- Poor Soil and/or Site Conditions
- Poor Light & Air Conditions
- Age and/or Performance of Existing Greens
- Replace Push-Up Greens with USGA Greens

USGA[®]

United States Golf Association

The USGA Green Section's Construction Education Program is provided as a service to everyone concerned with the proper construction and renovation of golf courses. The program's main goal is to provide high quality, agronomically sound construction information in a variety of formats.

This information is valuable to golf course architects, builders, superintendents, owners and players in their efforts to build and maintain golf courses.

www.usga.org

BMPs of Greens Renovation

Economic

- Cost of Maintaining Existing Green
- Speed of Play Issues
- Loss of Play Issues
- Asset Depreciation Benefits

BMPs of Greens Renovation

Playability

- Green Size – Too Small/Too Big
- Surface Contour Issues
- Style – Update or Re-Establish Original Design
- Access
- Bunkering

BMPs of Greens Renovation

Begin the Process

- Gather Support Data & Information
- Develop and Existing Conditions Report
- Conduct Existing Material Sampling
- Enlist USGA for Testing, Analysis & Advice
- Establish the Reasoning for the Renovation
- Sell the Benefits of the Project



*USGA Recommendations
For a Method of*

PUTTING GREEN CONSTRUCTION

2004 revision of the USGA Recommendations for a Method of Putting Green Construction



by the
**United States Golf Association
Green Section Staff**

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BMPs of Greens Renovation

Establish the Project Scope of Work

Total Green Complex Renovation

Partial Green Renovation – Core Out

Minimal Green Renovation – Gas & Grass

BMPs of Greens Renovation

Total Greens Complex Renovation

- Strip Existing Turf at Green Complex
- Salvage Topsoil (if any)
- Remove Existing Greensmix, Gravel, Drainage & Irrigation
- Re-Shape Entire Green Complex (usually including bunkers)
- Construct new Green (and bunkers)
- Replace Drainage & Irrigation
- Fumigate (if needed)
- Re-Grass

BMPs of Greens Renovation

Partial Greens Renovation – Core Out

- Strip Existing Turf at Green Surface
- Remove Existing Greensmix, Gravel & Drainage
- Minimal Modifications to Green Surface Sub-grade
- Install New Drain tile, Gravel & Greensmix
- Fumigate (if needed)
- Re-Grass

BMPs of Greens Renovation

Minimal Greens Renovation – Gas & Grass

- Strip Existing Turf at Green Surface
- Remove 4" - 6" of Existing Greensmix
- Replace with New USGA or Modified Sand
- Minor Surface Contour Adjustments
- Fumigate (if needed)
- Re-Grass

BMPs of Greens Renovation

Identify/Select Materials & Suppliers

- Greensmix – See USGA Recommendations
- Gravel
- Drainage Material
- Irrigation Material
- Grass – Seed/Spriggs/Sod

Basics 1

What do you want vs.
what can you afford



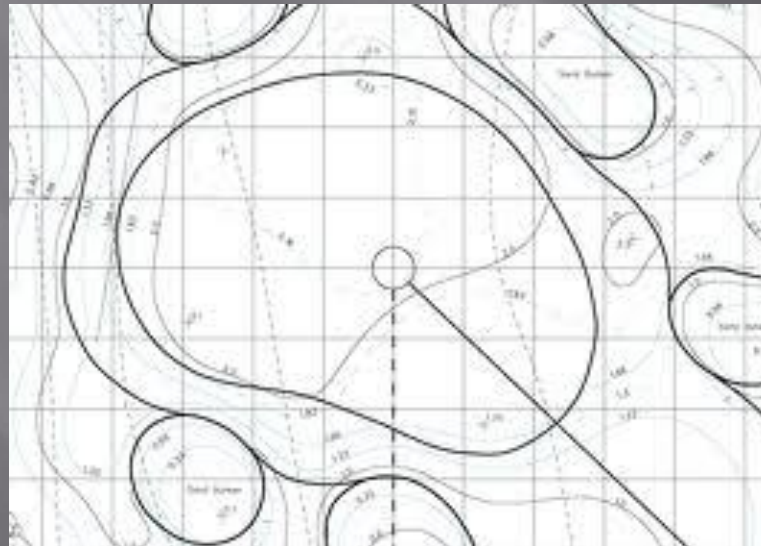
Basics 2

Develop a Plan with the
help of an Architect,
Builder or Consultant

Estimating your Project

Basics 3

Review all of the
Materials Specified



Basics 4

Understand the Details

BMPs of Greens Renovation

Develop the Project Budget

Planning and Permitting Costs

Construction Costs

Grow In Costs

Architectural Design



Permit and Professional Fees



BMPs of Greens Renovation

Planning and Permitting Costs

- Golf Course Architect - ASGCA
- Irrigation Consultant
- Engineer (if needed)

BMPs of Greens Renovation

Construction Costs – Materials

- Greensmix & Gravel
- Drainage & Interface
- Irrigation
- Amendements & Fertilizers
- Seed/Spriggs/Sod

BMPs of Greens Renovation

Construction Costs – Labor

- Mobilization
- Demolition – Strip & Remove Existing Turf & Materials
- Drainage & Irrigation Installation
- Greens Construction – Installation of Gravel & Greensmix
- Final Seedbed Preparation
- Grassing
- Final Clean Up & Demobilization

BMPs of Greens Renovation

Grow-In Costs

- Additional Fertilizer & Amendments
- Additional Labor
- Green Covers (if needed)

BMPs of Greens Renovation

Tips for Estimating Renovation Costs

- Costs to perform the Work
- Work closely with your Architect or Consultants to help understand and determine the costs
- Contractor estimates can be obtained prior to bid
- Bidding the project with enough time allowed
- Consider material costs- they are volatile
- Provide detailed plans and specifications, make sure they are complete
- All of these items help provide a fair bid comparison among your bidders and easier to evaluate

Existing Grass Removal



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Existing Grass Removal



Shaping



Drainage



Subgrade Preparation





Green Perimeter Liner





Greens Construction



Irrigation Installation



Irrigation Installation



Bunker drainage and preparation



Proper installation of Bunker liner





Seedbed Preparation



Soil Amendments





Grassing



Greens Drainage Before



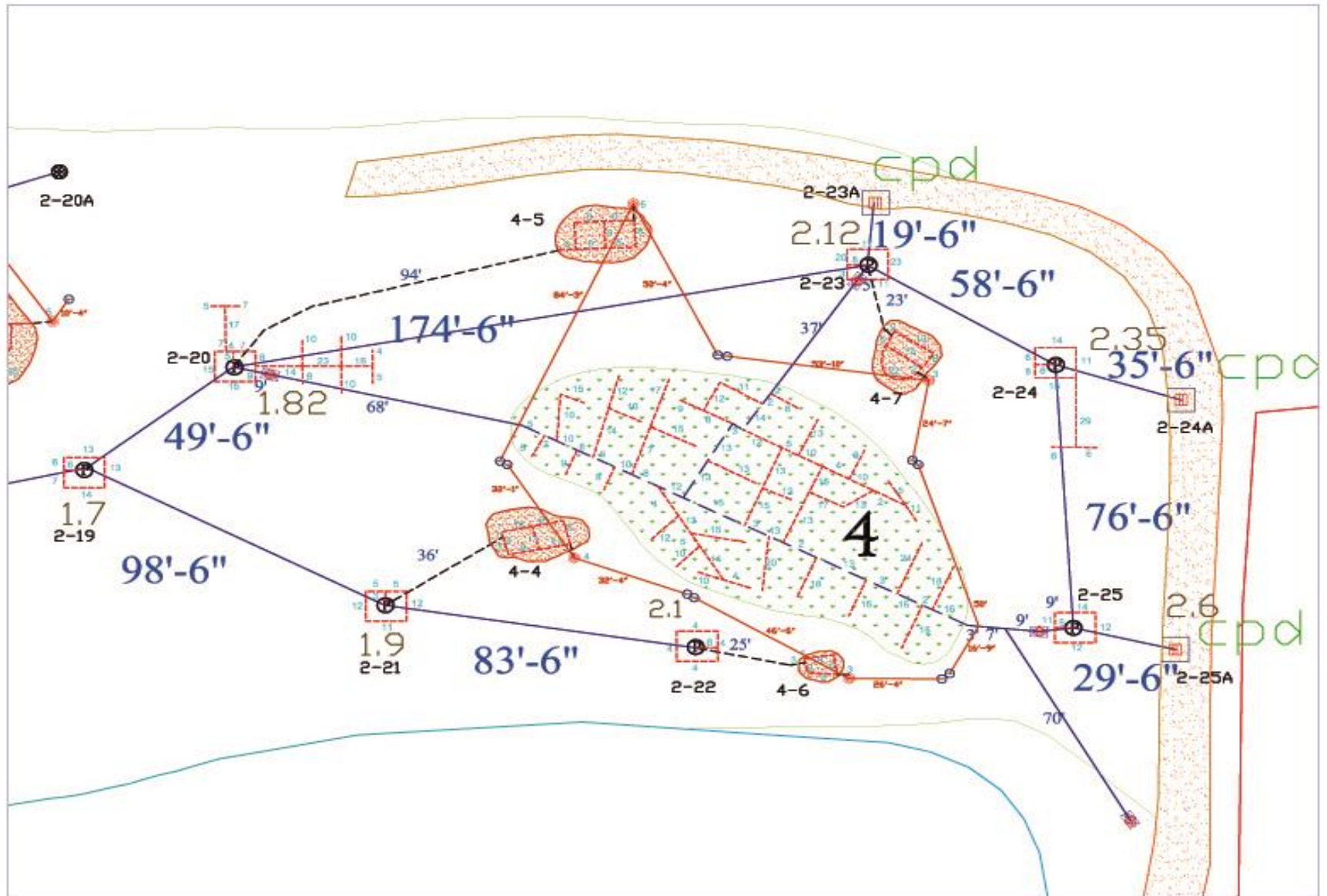
Greens Drainage After



Greens Drainage After



Green Asbuilts



BMPs of Greens Renovation

Choosing a Contractor

- GCBAA Member
- Consult References
- Review Past Work
- Interview Proposed Project Team
- Understand Contractor's Workload & Resources
- Discuss Proposed Schedule in Detail

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Items to be Aware of Prior to & During Project

- Understand the Disruption to Play
 - Communication about the Project
 - Traffic Control
 - Temporary Green System
- Understand the Staging Requirements
 - Contractor Yard
 - Sand & Gravel Storage
 - Drainage & Irrigation Material Storage
 - Sod Trucks
- Understand Access Requirements
 - On to the Property
 - Throughout the Property

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Items to be Aware of (cont.)

- Understand Trucking Delivery Capabilities
 - Full Semi vs Tandems
 - 10 Wheelers vs 5 CY Dump Trucks
- Understand Irrigation System Maintenance Req.
- Understand Maint. Of Undisturbed Areas
- Final Clean Up & Haul Road Repair

GET STARTED!



Thank You

On Behalf of the Golf Course Builders Association, we would like to thank you for your attendance today.

How To Contact GCBAA

www.gcbaa.org

information@gcbaa.org

