

OVERVIEW OF USES FOR ACQUIRED 3-D DATA IN PRE DESIGN, CONSTRUCTION, RENOVATION, AND MAINTENANCE & OPERATIONS

GPR APPLICATION	Pre Design	Construction	Renovation	M&O	BENEFITS
Initial base mapping of site subsurface to locate bed rock, underground drainage paths and other obstacles	☉				Helps prevent construction 'surprises' and cost overruns
Establish a baseline of existing underground infrastructure and as-built conditions where existing course records are incomplete or outdated			☉	☉	Improved diagnostic and remediation capabilities More cost effective allocation of renovation and M&O budgets
Quality Assurance of the initial "as built" greens and sports fields and critical draining areas		☉			Helps prevent unscheduled maintenance and renovation Helps ensure high quality sporting experience and facility reputation
Assessment of water draining problems BEFORE DIGGING to speed correction actions		☉	☉	☉	Provides a level of data detail not available with any other current technology Reduces "down time"
Assessment of greens, tees and fairways and sports fields to determine subsurface characteristics in areas identified for remediation or renovation			☉	☉	Improved diagnostic and remediation capabilities More cost effective allocation of renovation and M&O budgets Reduces "down time"
Locate subsurface areas with high volumes of water compared to the surrounding vicinity	☉	☉	☉		Provides valuable data that can be used in course layout and design of special features
Identify presence of voids and sinkholes and pinpoint location in real time	☉	☉	☉	☉	Real time data that can be used to determine effective work-arounds and/or remediation
Pinpoint the location of leaks in irrigation systems and drainage pipes			☉	☉	Conserves valuable resources – water, landscaping, time, budget

Note: Survey data can be combined with GPS topography maps, if available