History of the field

- Sod:
  - Tuckahoe Turf (New Jersey)
- Infield Material:
  - Kurtz Bros (central Ohio)
- Warning Track:
  - Country Stone crushed lava rock (New Mexico/Colorado)
- Rootzone:
  - Kurtz Bros (central Ohio)
- Irrigation:
  - Hunter

History of the field

- Lasted 9 years (through Oct 2017)
  - AAA Columbus Clippers
  - Daily camps
  - OHSAA State Championships (annually)
  - Big Ten Tournament
  - Concerts
  - Corporate Events
  - Weddings
  - Movie & Commercial Shoots

Getting Approval

- The best evidence is right in front of you
  - Drainage
  - Games played & successful events vs cancellations
  - Wear tolerance
  - Annual maintenance and product use
  - Revenue gained or lost
- Put a plan together
  - Identify what you have
  - Identify what you want
  - Research, research, and research some more
  - Stay involved

Highlights of New Field Design

- Know your benchmark
  - Point off which you are basing all elevation measurements
  - Point can not change
  - Ours: concrete edge of our shop floor adjacent to the field
- Pure conical grade from center of the mound
  - 0.45% grade
    - That equals 3.5" of fall per 100' of run
  - A 0.5% grade equals 4.0" of fall per 100' of run
  - Initial desire was for a 0.25% grade
    - That equals 2.5" of fall per 100' of run
  - Proved impossible with existing structural points
  - Elevation changes
    - Infield elevation dropped by over 5"
    - Foul territory warning track elevation rose by over 5"
Design Items Ultimately Scratched

- Running electric to the back of the mound
- Easy access for pitching machines
- Running concert power to a valve box buried beneath the turf just behind 3rd base at the top of the arc
- Easy access for 2nd base stage concerts
- Running relay lines from the center field wall to a valve box buried beneath the turf just behind 2nd base
- Easy access for running sound and lighting cords underground for large scale concerts instead of laying them on the surface and using bumblebee strips
- 14’ blow hole behind the mound
- A 14’ tube from the warning track to a box behind the mound to attach a turbine blower in order to bubble the tarp
- Rubber running track warning track
  - Reinforced concrete base and rubber running track in foul territory from bullpen mound to bullpen mound, mimicking our MLB parent club Cleveland Indians

Glyphosate was applied prior to grass removal

- Effort to reduce residual poa annua

Anything at the surface must be removed

- Irrigation heads
- Quick couplers
- Valve boxes
- Drain caps
- Who is responsible

Confirm access to the construction area

- Does equipment fit
- Are any permits required and who is responsible
- Avoid costly unnecessary damage

Determine how much material to remove

- Organic layer
- Change in grade or elevation
- Soil tests
  - Learn what you have
  - Know what you want

Besides the turf, what else will be removed

- Edges & transition points
- Infield material
- Warning track material
Will it be necessary to remove wall pads

Have a plan for removing the spoils
- Do you access to a paved area
- How easy can trucks get to the spoils pile

Have a plan for where the spoils will be taken to
- Trucking costs
- Disposal costs
- Can they be recycled or used by someone else
- Who is responsible

You will likely observe paint buildup
- Have you shifted logos over time for plant health

You will likely observe paint buildup
- Have you rotated logos
Removal of surface material can expose surprises:
- Be prepared to adjust your plan.
- Who is responsible for contingency costs?

Have a plan to salvage material when possible:
- We removed the rootzone from the infield to be reused.

Know the cost of changing elevations & grades:
- We removed and salvaged rootzone from the infield.
- We removed and disposed of pea gravel from the infield.

Pea gravel being removed from infield to expose drain lines.

Note old materials and techniques:
- Clay
- Renovated Infield Material
- Original infield material
- Rootzone
- Pea Gravel

Document everything.
Infield completely excavated down to subgrade

Have a plan for the new rootzone
- Take samples once all top material is removed
- Till as deep as possible

Removing old surface drains for the tarp
- Had four 4" drains along the outfield edges of the tarp

Lowering the elevation of the subgrade
- We removed approximately 3" of subgrade
Have a plan that is conducive for multitasking. Efficiency will expedite the project.

Note the different layers:
- Amended infield
- Original infield material
- Original subgrade elevation

Lowering the elevation of the subgrade:
- We removed approximately 3" of subgrade.

Determine the best location for offloading material:
- We had no-paved area to use.
- We used the widest portion of our warning track.
- We understood this would include some waste.

Transferring new pea gravel to the infield.
Grading the new pea gravel across the infield
- Use laser guided equipment whenever possible

New infield irrigation install
- New design/layout
- All new PVC, connections, and heads

Infield rootzone being reinstalled
- Specific amount being brought in

Use laser guided equipment whenever possible
Laser grading the infield rootzone
- Grading to exactly 4" below new final elevation

Infield rootzone reinstalled and graded
- Laser graded to exactly 4" below new final elevation

More multitasking
- Outfield rootzone continues to be tilled
- Spoils pile continues being transferred
- Edges/transition points being excavated

Tilling the outfield rootzone

Laser grading the outfield rootzone after tilling
- Laser graded to exactly 4" below new final elevation

Foul territory rootzone
- Tilled
- Laser graded to exactly 4" below new final elevation
Installation of warning track irrigation
  • Four new zones & valves added

Foul territory rootzone
  • Tilled
  • Graded to exactly 4" below new final elevation

Paint marks on concrete walls
  • During the project, everything buried underground was noted by a specific paint color on the walls
  • Red + Number
  • Irrigation valve + the zone it controls
  • Lime Green
  • End points for bullpen mounds and catchers pits
  • Light Blue
  • Capped drain access points

Anything you can do that will make life easier in the future should be done, especially marking underground points.

Old bullpens removed
  • New mounds would be at new elevation and location

Old bullpens removed
  • New mounds would be at new elevation and location
Foul territory rootzone
- Laser graded to exactly 4” below new final elevation
- Note the significant change in grade

Outfield rootzone
- Laser graded to exactly 4” below new final elevation
- Note the significant change in grade

Warning track
- Laser graded to exactly 4” below new final elevation
- Used existing material to create the new base
Irrigation

- Moving two valve boxes from beneath bullpen mound.

Game mound rubber

- Custom built a tray for the rubber to set in
- Allows for quick exchange of pitching rubber
- 4” base to set on same grade as plate
- 2” lips to maintain side to side and front to back

Warning track

- New design added 15” of width in foul territory
- Allows for easy passage of two vehicles at once

In Front of Dugout:
- Old width: 12’9”
- New width: 14’

Behind Home Plate:
- Old width: 12’9”
- New width: 16’

Between Dugout and Bullpen Mound:
- Old width: 17’9”
- New width: 19’

Remaining Foul Territory:
- Remained: 15’
- Remained: 20’

Rootzone

- Approx 1450 tons of new USGA sand was brought in
- Soil tests were conducted consistently to check
  - Physical makeup
  - Organic levels
  - Drainage
- A new rootzone composition was determined
  - Based on desired traits
  - Based on what was existing
  - Based on what would need to be added
- To accomplish that:
  - Created new 3.5” cap of USGA sand
Rootzone
- Approx 1450 tons of new USGA sand was brought in
- Laser guided bulldozer was used
- 3.5" cap of new USGA sand was created across the field

New warning track drainage
- Excavation to approximately 14" below new grade

Irrigation
- Edge of warning track moved
- Irrigation along that edge needed to be raised

New warning track drainage
- Excavation to approximately 14" below new grade
New elevation & grade
- An additional step had to be installed at dugout gates

New USGA rootzone sand
- Laser graded to exactly 0.5" below new final elevation

New USGA rootzone sand
- Laser graded to exactly 0.5" below new final elevation

New warning track drainage
- 14" catch basin installed at low points
- Concrete base poured
- Drains set immediately

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New warning track drainage
- Concrete base poured
- Drains set immediately
- Finish concrete poured after drains set
- Drains set at tolerance of ±/− 0.25" of new grade

New warning track drainage
- Concrete base poured
- Drains set immediately
- Expansion joints cut into concrete
New elevation & grade
- An additional step had to be installed at dugout gates.

New warning track drainage
- Concrete base poured
- Drains set immediately

New warning track drainage
- 14” catch basin was installed at each low point
- Drain tile was installed and tied into existing system

Thanksgiving Party
- Made sure everyone was well fed
- 3 roasted turkeys
- 4 deep fried turkeys
- 4 smoked turkeys

New warning track irrigation
- Trenching for install of new lines
New warning track irrigation
- Installation of new lines
- Head spacing width:
  - Same as depth between wall and grass

New warning track irrigation
- Installation of new lines
- Head spacing width:
  - Same as depth between wall and grass

Infield Dirt
- Old Material
  - 8’ column of a local native mix
  - Large amount of calcined blended in
    (do not blend conditioner into your infield)
- Old Material Amended
  - top 3’ heavily amended
    - 55% sand
    - 23.5% silt
    - 21.5% clay
- New Material
  - 4” cap on all dirt surfaces
    - 58% sand
    - 21% silt
    - 21% clay
- A 3” cap is normally plenty for a new construction build. I wanted to have an inch of buffer should amending ever occur.
Infield Dirt
- Had amended top 3" of existing infield material
- Contractor carefully removed top 3"
- Donated high quality material
- No disposal fees / cost

Infield Dirt
- Removed an additional 5.5" of infield material
- Material also donated
- No disposal fees / cost
- Laser graded at exactly 4” below new final elevation

New Infield Dirt
- Plywood road built over rootzone
- Custom designed engineered infield material

Basepaths
- Excavated to exactly 4” below new final elevation
- Old material stockpiled and being removed
Basepaths & Home Plate
• Excavated to exactly 4” below new final elevation
• Remaining old material being loaded out

Infield Dirt
• Laser graded to exactly 4” below new final elevation

Irrigation
• All irrigation heads and the quick coupler adjacent to the back arc were moved 4’6” off the edge in order to accommodate a pass with our 4’ wide aerifier

New Infield Material
• 4” cap of custom engineered material being installed

New Infield Material
• 4” cap of custom engineered material being installed
New Warning Track Material
- 4" cap of engineered dyed lava rock warning track

Game Mound
- Removed and disposed of – no materials salvageable

New Warning Track Material
- 4" cap of engineered dyed lava rock warning track

Game Mound
- Excavated to 4" below new surface grade

Game Mound
- New 4" cap of infield material installed as a base

Rootzone
- New 3.5" of new USGA sand being tilled and blended with the existing rootzone material to achieve the desired blend
Rootzone
- New 3.5” of new USGA sand being tilled and blended with the existing rootzone material to achieve the desired blend.

New Warning Track Material
- Laser graded with a duel mast attachment

Home Plate
- Double checking to make sure we’re perfectly square with the foul poles.

Home Plate
- Set him so absolutely unable in any direction.

Edges
- Basepaths
  - 4” wide total
  - 8” in fair territory
  - 4” white paint & 4” of dirt
  - 5” in foul territory
  - 4” white paint & 4” of dirt
- Cutouts
  - 15’ radius from 90’ corner
  - 7’4” in from 90’ line
- Inside edges
  - 28” in from 90’ line
- Back arc
  - 95’ from center of mound (not front of rubber)
1/7/2020

Edges
- Measuring off string lines
- Setting edges

New Mound
- Setting the rubber
- Measuring height, distance, and square

New Mound
- Setting the rubber
- Measuring height, distance, and square

New Mound
- Base was built with infield material
- Top 4" of table and wedge were built with black gumbo
Rootzone
- New 3.5” of new USGA sand being tilled and blended with the existing rootzone material to achieve the desired blend.

After tilling the entire outfield and foul territory in two directions, the rootzone was then laser graded to 0.5” below the final grade.

New Mound
- Base was built with infield material.
- Top 4” of table and wedge were built with black gumbo.

Rootzone
- After thorough blending and laser grading, additional soil tests were taken to ensure the final rootzone composition matched what was desired.

We went from nearly 100 valve boxes throughout the field for drains and quick couplers to a single valve box at the surface of the grass which houses an emergency shut-off for the quick coupler behind the mound.
Rootzone
- Laser graded to 0.5" below the final grade

Sod
- First of three days of sod trucks
  - Kentucky Bluegrass grown on sandy loam
  - From New Jersey

Sod
- 0.5" thick cut
  - Kentucky Bluegrass grown on sandy loam
  - From New Jersey

Sod
- End of the first day of sodding
Sod
  - Edges cut back to exactly 16' off the wall

Sod Delays
  - Snow storm
  - Sod farm put all resources towards resodding an NFL field to be ready for a game that Sunday

Warning Track
  - Laser grading to meet the new surface grade

Sod
  - Second day of sod trucks

Sod
  - Edging sod

Sod
  - Second day of sod trucks
Sod came with a significant amount of river stone. All sod was power broomed to work up the river stone and fluff the plants.

After being cleaned of the river stone, the sod was mowed to stand up the plants. A valve and a portion of the associated zone were crushed by semi trucks during the sand deliveries.

Infield material being prepped for laser grading.
Warning Track
- The remaining new warning track material was delivered and graded out for a final top coat.

Irrigation
- A valve and a portion of the associated zone were crushed by semi-trucks during the sand deliveries.

Infield Dirt
- Laser graded to new surface grade

Infield Dirt
- Laser graded to new surface grade

Infield Dirt
- Laser graded to new surface grade

New Warning Track Irrigation
- Heads being installed
Sod
- A green pigment was applied to the new sod

Warning Track
- Laser graded to new surface grade

Warning Track
- Laser graded to new surface grade

Warning Track
- Compacted with our 1.5 ton roller

Irrigation
- Blown out for the winter

Final Product
- Approximately 8 weeks
- October 30 through December 22
Final Thoughts
• Entire field was overseeded with 3 varieties of KBG at a rate of approximately 2lbs
  • Hampton, Bewitched, & Noble
• Ryegrass has been kept off the field except for heavy wear locations within 4' of dirt edges for easy removal with offseason big roll sod
• Would absolutely use barrier boards for all edges in the future to create crisp edges and minimize contamination
• Wish that we had replaced a large percentage of the irrigation lines in the warning track up to the valves with HDPE or High Density Polyethylene
• Wish that we had installed a separate supply line isolated to quick couplers
• Wish we had moved valves to several consolidated points