

HYDROGRID SUBSURFACE IRRIGATED HARTRU TENNIS COURTS

PART 1 - GENERAL

WORK INCLUDED

- A. Provide all equipment and materials, and do all work necessary to construct a HydroGrid subsurface irrigated fastdry tennis court complete and fully operational, including connections to water supply system, electrical service and storm drainage system as indicated on the drawings and as specified herein.
- B. The HydroGrid system is a fast-dry court with a subsurface irrigation system constructed beneath the fastdry surface. It is a patented system marketed by Welch Tennis Courts, Inc, P.O. Box 7770,4501 Old US Hwy 41, Sun City, Florida 33586

RELATED WORK

- A. Examine contract documents for requirements that affect work of this section. Other specification sections that directly relate to this section include but are not limited to:

INSERT RELATED WORK SECTIONS

REFERENCES

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
 - 1. American Society for Testing and Materials (ASTM):
 - GI36 Sieve analysis of fine and course aggregates.
 - D-1785 Specification for PVC plastic pipe schedules 40, 80 and 120.
 - D-2564 Specification for solvent cement for PVC piping systems.
 - D-2665 Test method for poly vinyl chloride (PVC) plastic drain, waste and vent pipe and fittings
 - D-2665 Test method for poly (vinyl chloride) (PVC) plastic drain, waste and vent pipe and fittings
 - 2. American Association of State Highway and Transportation Officials (AASHTO).
 - T-90 Determining the plastic limit and plasticity index of soils.
- B. Unless otherwise indicated, all tennis court playing lines shall conform to the Rules of

Tennis:

1. United States Tennis Association -Rule I
2. International Tennis Federation -Rule 1

SUBMITTALS

- A. Submit written verification provided by Welch Tennis Courts, Inc that the tennis court contractor is an authorized and licensed HydroGrid contractor.
- B. If the tennis court contractor is not an authorized, licensed contractor of HydroGrid, the contractor shall submit written verification provided by Welch Tennis Courts that a representative of Welch Tennis Courts will be present at the site during the construction of the HydroGrid System to insure compliance with the manufacturer's specifications and requirements.
- C. Provide written verification provided by Welch Tennis Courts, Inc that all HydroGrid materials and equipment utilized in the construction of the HydroGrid tennis court system has been manufactured by an authorized, licensed manufacturer of HydroGrid or have been purchased locally and meet the specifications set forth by Welch Tennis Courts.
- D. Submit a 150 mm (6") length sample of the tennis playing line tape proposed for use to the tennis facility consultant for approval prior to the purchasing of the line tapes.
- E. Upon completion of each HydroGrid water distribution system, the court contractor shall provide the tennis facility consultant and the owner with an as-built record of the HydroGrid distribution pipe invert elevations for each court installed.

QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts for tennis court construction and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Unless otherwise indicated, all tennis court playing lines shall conform to the Rules of Tennis:
 1. United States Tennis Association -Rule 1
 2. International Tennis Federation -Rule 2
- C. The grading tolerances required for the construction of the HydroGrid System are extremely critical. Therefore, it is required that the contractor utilizes laser-controlled equipment attached directly to the grading equipment.

- D. All work shall be performed in accordance with the best construction practices of the American Sports Builders Association (ASBA).

COORDINATION

- A. Prior to the ordering of the HydroGrid System, the contractor shall verify the court site to insure the ordering of sufficient materials.
- B. The HydroGrid system shall only be installed after the completion of the fine grading of the court sub-base and after all court edging, and foundations have been installed.

WARRANTY

- A. The contractor shall warrant the completed HydroGrid System against defects in workmanship and materials for a period of one (1) year after the date of substantial completion, which shall be established by the Owner.

PART 2 - PRODUCTS

PLASTIC MOISTURE BARRIER

- A. The plastic moisture barrier shall be 6-mil construction grade polyethylene sheeting. This material may be purchased locally and verification of the quality and specification shall be submitted to the Tennis Facility Consultant and to Welch Tennis Courts for approval prior to incorporating the material into the work.

SCREENINGS

- A. The screenings leveling course shall conform to the following gradation:

SIZE	METRIC (MM)	% PASSING
3/8"	9.50	100%
NO.4	4.76	80 -100%
NO.8	2.36	90 -95%
NO.10	2.06	85 -90%
NO.16	1.18	66 -72%
NO. 30	0.60	47 -52%
NO. 40	0.425	37 -42%
NO.50	0.30	27 -32%
NO. 80	0.18	14 -18%
NO.100	0.149	10 -20%
NO.200	0.074	1.5 -3.5%

Note: Due to variances in the availability of a suitable material for this leveling course in the geographic location of the court site, the Contractor shall submit the gradation of the

material that he intends to use for review and approval by Welch Tennis Courts, Inc with copies of the Approval submitted to the Tennis Facility Consultant. For this project contractor is to use concrete (lime rock) screenings or equivalent as approved and tested by Welch Tennis Courts, Inc. Load bearing 100 psi. Constant head percolation 15ft per day permeability as tested by Welch Laboratory. For this project contractor is to use concrete (lime rock) screenings. RINKER product code I037202.

- B. When tested in accordance with AASHTO T90, the portion of screenings passing the No.40 sieve or smaller shall be non-plastic.

DISTRIBUTION PIPING AND FITTINGS

- A. Distribution header and fittings shall be one 37 mm (1 1/2") diameter schedule 40 PVC pipe, conforming to ASTM 1785 and shall be supplied by Welch Tennis Courts as a part of the HydroGrid system package.
- B. Water distribution laterals within the court zones shall be a pre-manufactured 57mm (2 1/2") diameter perforated PVC pipe with a geotextile sock.

WATER CONTROL CANISTERS, FILTER, WATER METER and TIME CLOCK

- A. All water control canisters, filters, water meters and time clocks shall be supplied by Welch Tennis Courts, Inc as a part of the HydroGrid Package. No substitutions will be permitted.

LEE HYDROBLEND SURFACE MATERIAL

- A. The Fast-Dry surface material shall be Lee HydroBlend as manufactured by Lee Tennis, LLC. No substitutions will be permitted.
- B. The HydroBlend surface material color shall be green

TENNIS PLAYING LINE TAPE

- A. Tennis playing line tape shall be 50 mm (2 in) wide, "Select' or "Herringbone" pattern, textured, PVC coated, and pre-punched.
- B. Tennis playing line tape shall be supplied by the following manufacturer or an approved equivalent:
 - 1. Pre-Punched "HERRINGBONE" Line Marking Tape

Welch Tennis Courts, Inc.
4501 US Hwy 41 S
Sun City, FL. 33586
(800) 282 - 4415

TENNIS PLAYING LINE TAPE NAILS

- A. Tennis playing line tape nails shall be 75 mm (3in) long aluminum nails with flat textured heads manufactured solely for the purpose of anchoring tennis line tape to the fast-dry court surface.
- B. Tennis playing line tape nails shall be supplied by the following manufacturer or an approved equivalent:
 - 1. 75 mm (3 in) Large head aluminum nails

Welch Tennis Courts, Inc.
4501 US Hwy 41 S
Sun City, FL. 33586
(800) 282 - 4415

MAINTENANCE EQUIPMENT

- A. The tennis court contractor shall provide the Owner with the equipment and tools required to maintain the tennis courts.
- B. The following equipment and tools shall be provided by the court contractor to maintain the HydroGrid tennis courts:

INSERT MAINTENANCE EQUIPMENT

PART 3 - EXECUTION

GENERAL

- A. The HydroGrid System is a fast-dry court with a sub-surface irrigation system constructed beneath the fast-dry surface. It is a system marketed by Welch Tennis Courts, Inc, 4501 Old US Hwy 41, Sun City, FL 33586
- B. The HydroGrid System must be installed by an authorized, licensed contractor of HydroGrid. Likewise, all materials and equipment that is utilized in the HydroGrid System must be manufactured by an authorized, licensed manufacturer of HydroGrid. If the contractor is not an authorized, licensed contractor of HydroGrid, a representative of Welch Tennis Courts must be present at the project site during the construction of the HydroGrid System to insure compliance with the manufactures specifications and requirements.
- C. Prior to ordering the HydroGrid system from the manufacturer, the contractor shall confirm the size of the court to insure the ordering of sufficient materials to complete the construction of the tennis courts.

SUB-GRADE

- A. The sub-grade must be shaped and fine graded to the elevations indicated on the drawings. The sub-grade shall be thoroughly compacted to insure stability and to eliminate any future settlement. Final grading shall be performed using stone screenings or clean sand where additional material is required to provide the sub-grade elevations indicated on the drawing. There shall be no sharp objects in the sub-grade that could in anyway affect the effectiveness or purpose of the Moisture Barrier.

MOISTURE BARRIER

- A. The moisture barrier shall consist of two layers of 6-mil construction grade polyethylene. The joints shall be staggered to maintain as much water above the barrier as is possible.

WATER DISTRIBUTION HEADERS

- A. Water header distribution piping shall be laid true to grade, to provide a constant, uniform water supply to the laterals in each zone as indicated on the drawings [maximum deviation plus or minus 3 mm (1/8")] to insure a free flow of water and to prevent air locks in the entire water distribution system.

WATER CONTROL CANISTERS

- A. Water control canisters shall be installed with the bottom of the canister slightly below the Sub-grade elevation of the zone headers being controlled. All header piping must exit the control canister end enter the court water distribution system through the court edging at the court sub-grade elevation.
- B. It is important that the area designated for the water control canisters, the water filter, meter and electrically controlled valves are located for easy maintenance and be free from the area where they could interfere with players or spectators.

WATER CONTROL SYSTEM

- A. An electrically operated solenoid valve, Hunter PGV-151 valve shall be installed on the water supply to each court. This valve shall be actuated from a control dock designed for this type of operation and with sufficient circuits to operate the tennis court irrigation system. The preferred manufacturer is Nelson and the type will be determined in the field depending upon the source, pressure and volume of water available.

LEVELING COURSE

- A. A stone screenings leveling course shall be constructed on the Plastic Moisture Barrier. The stone screenings is used to produce the desired moisture distribution in the court sub surface and therefore must be installed to the elevations set forth on the drawings and to a consistent thickness.

- B. The surface of the stone screenings shall slope 25 mm (1 in) in each 12,192 mm (40ft) of horizontal distance across the court in a single plane from side to side as indicated on the project drawings.
- C. The screenings leveling course shall be constructed with its surface level with the concrete edging around the perimeter of the court.
- D. The screenings shall be compacted using a 275 kg (600 pound) steel wheeled tandem roller. After rolling, the leveling course shall be checked and re-leveled to insure a uniform plane, level with the top of the proposed finish court edging. Laser equipped grading equipment is best suited for this leveling procedure and shall be used for this procedure.
- E. A wedge of stone screenings eighteen inches 460 mm (18 in) wide and 25 mm (1 in) at the edging shall be removed to allow the HydroBlend to finish level with the edging around the perimeter of the court. This is important to insure that the edging does not impede the runoff from the court surface.

HYDROBLEND FAST-DRY SURFACE COURSE

- A. The fast-dry surface course shall be constructed using HydroBlend fast-dry material only.
- B. The surface course shall be installed over the leveling course at a uniform rate of 55 kg per m² (100 lbs per square yard) green material to a loose thickness of 32 mm (1 ¼ in) using laser-equipped equipment suitable for the grading of the Hydro Blend material. The surface course material shall be watered from above immediately after laying and then compacted with a tandem roller weighing approximately 275kg (600 lbs) per roll. The finished surface course shall not vary from the specified grade more than 3 mm (1/8in) from the true design plane of the court surface.
- C. Activate the HydroGrid watering system after the compaction has been completed on the fast-dry surface course.
- D. Inspect all equipment, canisters, headers and laterals to insure the system is functioning as intended and that there is no leakage.

PLAYING LINES

- A. The playing lines shall be accurately positioned, stretched and held in place by 75 mm (3") aluminum nails with flat heads, manufactured for this purpose.
- B. Lines shall be accurately positioned in accordance with the rules of the United States Tennis Association (USTA) and the International Tennis Federation (ITF).