

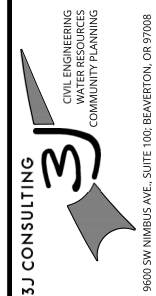
ASTM C-33 SAND SPECIFICATIONS			
U.S. SIEVE	METRIC SIEVE	MAX SPEC	MIN SPEC
3/8"	9.500	100%	100%
#4	4.750	100%	80%
#8	2.360	85%	65%
#16	1.180	75%	50%
#30	0.600	60%	40%
#50	0.425	20%	10%
#100	0.150	10%	2%
#200	0.075	6%	0%
CLAY	0.005	3%	0%

1. **TECHNICAL STANDARDS**
 - 1.1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST BEAVERTON SCHOOL DISTRICT TECHNICAL STANDARDS DIVISION 0-33.
2. **GENERAL PROCEDURES**
 - 2.1. CONTRACTOR TO WORK FROM CITY OF BEAVERTON APPROVED PERMIT SET
 - 2.2. CONTRACTOR TO PROVIDE DISTRICT WITH MATERIAL SUBMITTALS FOR ALL ITEMS PRIOR TO INSTALLATION OF PRODUCTS. MATERIAL SUBMITTALS TO INCLUDE PRODUCT INFORMATION, SHOP DRAWINGS, OPERATION AND MAINTENANCE INFORMATION AND PRODUCT WARRANTY INFORMATION AS NEEDED.
 - 2.3. CONTRACTOR TO PROVIDE ASBESTOS-FREE STATEMENT FOR THE PROJECT.
 - 2.4. CONTRACTOR TO PROVIDE "AS-BUILT" MARK-UPS FOR INSTALLED SYSTEM TO 3J CONSULTING FOR PREPARATION OF FINAL "AS-BUILT" DRAWINGS FOR DISTRICT RECORDS. "AS-BUILT" MARKUPS TO INCLUDE IMPACTED IRRIGATION ZONES.
3. **DRAINAGE DESIGN**
 - 3.1. CONTRACTOR TO INSTALL BASED ON OVERALL DRAINAGE LAYOUT. SHEET C1. CONTRACTOR TO VERIFY THAT FINAL LATERAL LAYOUT RUNS AT A NON-PARALLEL ANGLE TO EXISTING SLOPE DIRECTION.
 - 3.2. ALL LATERALS ARE PARALLEL AND AT 10' SPACING. LINES CAN EXCEED 10' ON OCCASION TO ALLOW FOR OBSTRUCTIONS OR IRRIGATION SYSTEMS.
 - 3.3. ALL LINES COLLECTOR AND LATERAL TO HAVE A MINIMUM OF A .25% SLOPE.
 - 3.4. COLLECTOR LINES TO INCORPORATE CLEANOUTS AS NECESSARY TO MEET OREGON PLUMBING CODE REQUIREMENTS
4. **MATERIALS**
 - 4.1. **DRAINAGE PIPE**
 - 4.1.1. LATERAL PIPE TO BE A MINIMUM OF 2" ROUND PERFORATED HDPE WITH WIDE SLOT HOLES (NO CUT IN SLOTS). NO SOCK
 - 4.1.2. COLLECTOR LINE TO BE A MINIMUM OF 4" DUAL WALL PERFORATED HDPE PIPE. NO SOCKS
 - 4.1.3. FITTINGS TO BE CAPABLE OF MAKING SOIL TIGHT CONNECTIONS AT ALL JOINTS AND CONVEYING FULL FLOW WITHOUT OBSTRUCTION
 - 4.2. TRACER WIRE TO BE BLUE WITH A MINIMUM GAGE OF 14 GAGE.
 - 4.3. TRACER WIRE TO BE CONNECTED USING 3M DBYR'S (OR APPROVED EQUAL).
 - 4.4. **TRENCH SAND**
 - 4.4.1. TRENCHES TO BE BACK FILLED WITH SAND WITH MINIMUM SIEVE ANALYSIS OF ASTM C-33 (SEE TABLE THIS SHEET)
 - 4.4.2. TRENCHES TO HAVE A MINIMUM OF 10" OF SAND ABOVE TOP OF PIPE TO PLAYING SURFACE.
 - 4.5. **TRENCH TOPPING MIX**
 - 4.5.1. ALL TRENCHES INSIDE PLAYING SURFACE SHALL BE TOPPED WITH A GROW-IN MIX A MINIMUM OF 1" DEEP.
 - 4.5.2. GROW IN MIX SHALL CONSIST OF A MOISTURE HOLDING COMPONENT THAT STILL ALLOWS FOR WATER TO FREE DRAIN THROUGH IT AT 10% BY VOLUME. NUTRIENTS ENOUGH TO SUSTAIN SEED THROUGH INITIAL 4 WEEKS OF GROW IN, AND PERENNIAL RYE GRASS SEED BLEND AT A RATE OF 50#/ YARD OF MIX. 1.
5. **EQUIPMENT**
 - 5.1. **FLOTATION OF ALL EQUIPMENT.**
 - 5.1.1. ALL EQUIPMENT THAT CAN OR WILL TRAVEL ON TURF SURFACE MUST USE TURF TYPE FLOTATION TIRES. WITH IMPACT OF NO MORE THAN 20 PSI ON TURF SURFACE.
 - 5.2. **TRENCHER**
 - 5.2.1. ALL TRENCHING TO BE PERFORMED BY EQUIPMENT THAT IS LASER GUIDED AND MACHINE CONTROLLED.
 - 5.2.2. TRENCHER MUST REMOVE SPOILS FROM TRENCH WITHOUT AFFECTING EXISTING PLAY FIELD. MACHINE SHALL ALSO LEAVE LESS THAN 1" OF DISLODGED DEBRIS ON BOTTOM OF TRENCH.
 - 5.2.3. TRENCHER TO HAVE A MINIMUM DIGGING RANGE OF 8'-24" BELOW TURF SURFACE.
 - 5.2.4. TRENCHER MUST BE CAPABLE OF CUTTING AT LEAST A 5" WIDE TRENCH WHEN REQUIRED.
 - 5.3. PIPE TO BE PLACED IN BOTTOM OF TRENCH IN A CONTINUOUS FASHION, WITH A LIMITED NUMBER OF COUPLERS PER RUN.
 - 5.4. **SAND BACK FILLER**
 - 5.4.1. BACK FILLING EQUIPMENT WILL HAVE THE CAPABILITY TO "FUNNEL" SAND DIRECTLY INTO DRAINAGE TRENCH IN LIFTS.
 - 5.5. **TRENCH COMPACTOR**
 - 5.5.1. ANY TRENCH COMPACTION EQUIPMENT SHALL BE ABLE TO COMPACT 1" INSIDE TRENCH IN A CONTINUOUS MANNER, WITH VIBRATION CAPABILITIES WHEN NEEDED.
 - 5.6. **FIELD ROLLER**
 - 5.6.1. FIELD ROLLER TO BE DOUBLE DRUM TYPE WITH VIBRATION CAPABILITIES AS NEED, WITH A MINIMUM WEIGHT OF 3 TONS.
6. **MINIMUM PROCEDURE REQUIREMENTS**
 - 6.1. **LAYOUT**
 - 6.1.1. ALL DRAINAGE LINE TO BE POSITIONED TO CREATE THE LEAST AMOUNT OFF INTERFERENCE WITH IRRIGATION LINES AND HARD STRUCTURES.
 - 6.1.2. ALL IRRIGATION HEADS TO BE MARKED. DRAINAGE LINE LAYOUT TO STAY A MINIMUM OF 1' AWAY FROM HEADS OR OBSTRUCTIONS.
 - 6.1.3. ANY IRRIGATION LINES OR STRUCTURES DAMAGED DURING INSTALLATION TO BE REPAIRED AS SOON AS POSSIBLE
 - 6.2. **TRENCH**
 - 6.2.1. ALL TRENCHES CUT OPEN TO BE BACK FILLED SAME DAY UNLESS PRE-ARRANGE AND SAFETY PRECAUTIONS TAKEN TO ENSURE TRENCH ACCESS IS RESTRICTED.
 - 6.2.2. TRENCHING AND SPOILS REMOVAL TO BE A SINGLE OPERATION PROCESS. WITHOUT SPOILS TOUCHING THE GROUND.
 - 6.2.3. TRENCHING WIDTH TO BE MINIMIZED TO ACCOMMODATE PIPE SIZE ONLY. TO REDUCE IMPACT ON PREEXISTING TURF, AND TO ALLOW FOR THE MOST RAPID OF RECOVERIES.
 - 6.2.4. TRENCH DEPTH TO BE A MINIMUM OF 13" BELOW TURF SURFACE.
 - 6.3. **WIRE INSTALLATION**
 - 6.3.1. WIRE TO BE INSTALLED UNDER PIPE WHENEVER POSSIBLE TO KEEP WIRE INTACT IN CASE IN NEEDS TO BE DUG UP LATER.
 - 6.3.2. WIRE TO BE INSTALLED AS ONE CONTINUOUS SYSTEM THAT CAN BE ACCESSED AT ONE POINT FOR FUTURE IDENTIFICATION
 - 6.4. **DRAINAGE PIPE INSTALLATION**
 - 6.4.1. DRAINAGE PIPE TO HAVE A VERIFIABLE SLOPE MINIMUM OF .25%.
 - 6.4.2. DRAINAGE PIPE TO BE INSTALLED TO ENSURE SAME SLOPE AS TRENCH BOTTOM AND SECURED AT LEAST EVERY 25'
 - 6.5. **SAND BACKFILL PROCESS**
 - 6.5.1. ALL TRENCHES TO HAVE A MINIMUM OF TWO LIFTS BEFORE TOPPING MATERIAL.
 - 6.5.2. ALL TRENCHES TO BE COMPACTED WITH SPECIFIED COMPACTION WHEEL A MINIMUM OF THREE TIMES WITH SEMI-WET SAND.
 - 6.5.3. TRENCHES TO BE TOPPED WITH A MINIMUM OF 1" DEEP OF SPECIFIED TOPPING MIX NO WIDER THAN THE CUT TRENCH WIDTH + 2'.
 - 6.6. **SURFACE RESTORATION**
 - 6.6.1. ENTIRE DRAINED SURFACE TO BE ROLLED WITH MINIMUM 3-TON DOUBLE DRUM ROLLER TO SMOOTH ALL DISTURBED GROUND IN A MINIMUM OF TWO PERPENDICULAR DIRECTIONS.
 - 6.6.2. ALL TURF TO BE AERATED A MINIMUM 3" DEPTH WITH ½" CORING TINES WITH A MAXIMUM SPACING OF 3' X 3'.
 - 6.6.3. ALL TURF TO BE RESEED AT A MINIMUM OF 5#/1000 OF APPROVED SEED BLEND.
 - 6.6.4. ALL TURF TO BE TOP DRESSED WITH THE SPEC SAND A MINIMUM OF ONE TIME ½" DEEP. THAT IS A RATE OF .75 OF A YARD PER 1000 SQFT OR 33 YARDS PER ACRE.



PUBLISH DATE
5/4/2022
ISSUED FOR
BID SET
REVISIONS

GENERAL NOTES AND SPECIFICATIONS
SOUTHBRIDGE HIGH SCHOOL
SOFTBALL DRAINAGE
BEAVERTON SCHOOL DISTRICT
BEAVERTON, OREGON



PROJECT INFORMATION
3J PROJECT # | 22780
TAX LOTS# | 1S128DD 300
LAND USE # | N/A
DESIGNED BY | JMF
CHECKED BY | JJS

SHEET NUMBER
C2