

EXHIBIT A
MWRA WATER OPERATIONS SPECIAL TERMS AND CONDITIONS

- PERMITTEE OR ITS DESIGNEE TO PROVIDE AT LEAST 72-HOUR PRIOR NOTICE TO THE MWRA'S INSPECTION DEPARTMENT, BY CALLING WARREN MURPHY (817) 305-5933, LOCATED AT 2 GRIFFIN WAY, CHELSEA, MA 02150.
- A MINIMUM VERTICAL CLEARANCE OF 18 INCHES SHALL BE MAINTAINED BETWEEN THE AUTHORITY'S WATER MAINS AND OTHER UTILITY CROSSINGS UNLESS OTHERWISE NOTED. HOWEVER, WATER/GAS AND OTHER UTILITY SERVICE CROSSINGS WITH A PIPE SIZE DIAMETER OF 2-INCHES OR LESS MAY BE PERMITTED TO CROSS THE AUTHORITY'S PIPELINE AT A REDUCED CLEARANCE SUBJECT TO MWRA REVIEW. EXCEPT FOR SPECIAL PROVISIONS, I.E. CAPPED OR PLUGGED PIPES, THRUST BLOCKS AND OR BENDS WHICH WOULD REQUIRE A GREATER CLEARANCE SEPARATION)
- A MINIMUM OF THREE-(3) FEET TO FIVE-(5) FEET HORIZONTAL CLEARANCE IS REQUIRED BETWEEN ADJACENT UTILITIES AND THE SIDE (SPRING LINE) OF ANY MWRA MAIN. (EXCEPT FOR SPECIAL PROVISIONS, I.E. CAPPED OR PLUGGED PIPES, THRUST BLOCKS AND OR PIPE BENDS WHICH WOULD REQUIRE A GREATER CLEARANCE SEPARATION)

- CROSSINGS OF MWRA WATER MAINS SHALL BE LOCATED A MINIMUM HORIZONTAL DISTANCE OF AT LEAST FOUR (4) FEET FROM ANY JOINTS OF THE AUTHORITY'S MAINS.
- PROPOSED PIPE/UTILITY CROSSINGS OF THE AUTHORITY'S WATER MAINS SHALL CROSS AT A 90-DEGREE ANGLE TO MINIMIZE INTERFERENCE.
- FOR DISTANCES OVER FOUR (4) FEET OF THE AUTHORITY'S MAINS WHICH ARE TO BE UNDERMINED THE METHOD AND TYPE OF PIPE SUPPORT PLAN SHALL BE SUBMITTED AND STAMPED BY A PROFESSIONAL ENGINEER (P.E.) LICENSED IN MASSACHUSETTS FOR PRIOR APPROVAL BY THE AUTHORITY.
- FOR DISTANCES UNDER FOUR (4) FEET OF THE AUTHORITY'S MAINS WHICH ARE TO BE UNDERMINED, THE ON-SITE MWRA INSPECTOR SHALL REVIEW AND APPROVE THE PROPOSED SUPPORT OF THE MAIN UNDER NO CIRCUMSTANCES SHALL THE AUTHORITY'S MAIN BE LEFT IN AN UNSUPPORTED, UNDERMINED POSITION OVERNIGHT.
- DURING CONSTRUCTION, APPROPRIATE SHEETING MEASURES MUST BE TAKEN TO PROTECT THE INTEGRITY OF THE AUTHORITY'S WATER MAINS. THE SHEETING DESIGN MUST BE REVIEWED BY THE AUTHORITY PRIOR TO THE START OF THE CONSTRUCTION. THE DESIGN SHALL BE STAMPED BY A PROFESSIONAL ENGINEER, LICENSED IN MASSACHUSETTS. THE USE OF A TRENCH BOX IS NOT PERMITTED IN THIS APPLICATION.
- SUITABLE COMPACTION METHODS SHALL BE EMPLOYED IN RESTORING THE BEDS OF THE MWRA'S MAINS BACKFILLING AROUND THE MWRA'S MAINS SHALL BE PLACED IN MAXIMUM 6-INCH LIFTS AND COMPACTED BY HAND VIBRATORY COMPACTORS.
- THE MWRA PIPELINE MUST BE PROTECTED AT ALL TIMES DURING CONSTRUCTION. THE AUTHORITY MAY REQUIRE A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS TO SUBMIT A CONSTRUCTION PLAN AND/OR PIPELINE ANALYSIS THAT IS TO BE ATTACHED TO THIS BM PERMIT.

- SCREENED GRAVEL SHALL BE UNIFORMLY GRADED WITH MAXIMUM SIZE OF A PARTICLE BETWEEN 3/8 INCH AND 1/2 INCH. SCREENED GRAVEL SHALL CONSIST OF CLEAN, HARD AND DURABLE PARTICLES WITHOUT DISINTEGRATED PIECES OR OTHER OBJECTIONABLE MATERIAL. CRUSHED ROCK OF SUITABLE SIZE AND GRADING MAY BE USED IN PLACE OF SCREENED GRAVEL AT THE OPTION OF THE MWRA INSPECTOR.
- FOR TEST PIT EXCAVATIONS OR UNLIFTING OF THE AUTHORITY'S WATER MAIN THE PERMITTEE MUST EXCAVATE THE LAST 2'-FEET, BEFORE THE TOP OF PIPE, BY HAND OR USE A VACUUM BORING METHOD AND BACKFILL WITH APPROVED MATERIAL WITHIN AN EASEMENT OR ROADWAY AREA.
- THE PERMITTEE IS RESPONSIBLE TO ADJUST ANY OR ALL MWRA FRAMES AND COVERS TO GRADE WITHIN THEIR LIMITS OF WORK IN ACCORDANCE WITH THE PLANS REFERENCED IN THIS PERMIT. THE AUTHORITY WILL PROVIDE THE PERMITTEE WITH NEW REPLACEMENT MWRA FRAMES AND COVERS (AT NO EXPENSE TO THE PERMITTEE) FOR ANY EXISTING FRAMES AND COVERS THAT HAVE BEEN DEMAILED UNUSABLE BY AUTHORITY PERSONNEL.
- ALL MWRA MANHOLE OPENINGS THAT WERE COVERED DURING THE BINDER COURSE INSTALLATION SHALL BE MADE ACCESSIBLE WITHIN 48-HOURS. MWRA MANHOLE FRAME AND COVERS SHALL NOT BE REMOVED FOR GRADING AND/OR PULVERIZING. PULVERIZING IS NOT ALLOWED OVER MWRA MANHOLE STRUCTURES.
- THE PERMITTEE WILL PROVIDE A LOGISTICS CONSTRUCTION SCHEDULE IN WRITING, ALONG WITH EMERGENCY CONTACT INFORMATION WHENEVER MWRA FACILITIES OR FACILITIES ARE COVERED OR OBSTRUCTED.
- MWRA INSPECTION PERSONNEL MUST BE ON SITE WHENEVER EXCAVATION, CONSTRUCTION AND HOSTING OR RIGGING OCCURS AROUND AN MWRA WATER MAIN PIPELINE.
- NO CONSTRUCTION EQUIPMENT INCLUDING CRANES, BACKHOES OR MATERIAL MAY BE PARKED, STATIONED, SET UP OR STORED ON TOP OF THE MWRA'S WATER MAINS OR INFRASTRUCTURE.
- REPLACEMENT (SHUTDOWN) OF THE MWRA'S MAINS SHALL BE COORDINATED WITH THE AUTHORITY. FOUR-(4) WEEKS-ADVANCED NOTICE IN WRITING IS REQUIRED FOR SHUTDOWNS.
- THE PERMITTEE OR ITS DESIGNEE SHALL CONTACT THE AUTHORITY THREE (3) WEEKS IN ADVANCE WHEN AN MWRA WATER MAIN VALVE MUST BE OPERATED. ONLY MWRA PERSONNEL WILL OPERATE MWRA VALVES. THE PERMITTEE OR ITS DESIGNEE SHALL NOT OPERATE ANY MWRA VALVES. MWRA VALVE OPERATIONS ARE LIMITED DURING PEAK DEMAND PERIODS AND MAY NOT BE AVAILABLE BETWEEN THE DATES OF MAY 15TH AND SEPTEMBER 15TH OF EACH CALENDAR YEAR.

- THE PERMITTEE WILL BE RESPONSIBLE TO PROTECT AND CORRECT ANY DAMAGE(S) TO THE AUTHORITY'S PROPERTY OR PIPELINE AT NO COST TO THE MWRA.
- AS-BUILT DRAWINGS SHALL BE FURNISHED TO THE AUTHORITY UPON THE COMPLETION OF PERMITTED WORK. A PROFESSIONAL MASSACHUSETTS REGISTERED LAND SURVEYOR OR ENGINEER SHALL STAMP AS-BUILT DRAWINGS.
- MWRA DETAIL RECORDS "FIELD SKETCHES" SHALL BE UPDATED (WITH ACCURATE FIELD TIES) BY THE PERMITTEE AND SHALL BE FURNISHED TO THE AUTHORITY UPON THE COMPLETION OF THE PERMITTED WORK.
- THE PERMITTEE SHALL INDEMNIFY AND HOLD HARMLESS THE AUTHORITY AND ITS SUCCESSORS AND ASSIGNS FROM ANY AND ALL DAMAGES AND/OR CLAIMS FOR DAMAGE TO THE PERMITTEE'S CONDUITS, FACILITIES AND/OR PROPERTY AS A RESULT OF THE AUTHORITY'S OPERATION, MAINTENANCE, REPAIR, AND/OR REPLACEMENT OF AUTHORITY PROPERTY, OR AS A RESULT OF THE FAILURE OF AN AUTHORITY WATER PIPE.
- THIS PERMIT ADDRESSES ONLY MWRA-OWNED AND OPERATED INFRASTRUCTURE. THE PERMITTEE IS REQUIRED TO OBTAIN NEEDED SEPARATE APPROVALS FROM THE CITY, TOWN AND OTHER STATE AGENCIES.
- THE PERMITTED WORK AND LOCATION OF INSTALLED FACILITIES AND APPOINTMENTS SHALL NOT DEVIATE FROM THE CONSTRUCTION PLAN THAT IS REFERENCED IN THIS PERMIT. NO FIELD CHANGES ARE ALLOWED WITHOUT PRIOR REVIEW AND WRITTEN APPROVAL BY THE MWRA BM PERMIT PROJECT MANAGER. AN MWRA ON SITE INSPECTOR SHALL REVIEW ALL FIELD CHANGES AND COORDINATE WITH THE PERMITTEE REGARDING SUBMITTING A CHANGE OF WORK PLAN TO THE AUTHORITY FOR REVIEW AND COMMENT. IF MWRA FIELD INSPECTION INDICATES CHANGES UNDERGONE WITHOUT APPROVAL, THE PERMITTEE MAY BE ISSUED A CEASE AND DESIST ORDER AND BE REQUIRED TO CORRECTLY RECONSTRUCT ANY COMPLETED WORK.

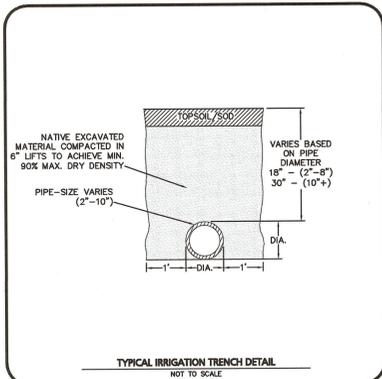
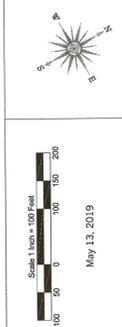
- THE AUTHORITY MAY REQUIRE A CONSTRUCTION PLAN ALONG WITH AN ANALYSIS OF THE MWRA'S PIPELINE (PREPARED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS). THE PIPELINE ANALYSIS SHALL TAKE INTO CONSIDERATION THE CONSTRUCTION EQUIPMENT, WHICH WOULD BE USED OVER THE AUTHORITY'S PIPELINE IN INSTANCES WHERE THE EXISTING ROADWAY SURFACE WILL BE COMPLETELY EXCAVATED AWAY REMOVING THE PROTECTION OF THE HS-20 SURFACE LOADING BARRIER. THIS PLAN AND SUPPORTING CALCULATIONS WILL NEED TO BE SUBMITTED TO THE MWRA FOR REVIEW.
- THE AUTHORITY REQUESTS THE SUBMITTAL OF "CUT SHEETS AND/OR SHOP DRAWINGS" FOR REVIEW OF ALL NEWLY PROPOSED MATERIALS THAT WILL COME UNDER THE OWNERSHIP OF THE MWRA.
- WHERE PIPE JACKING IS REQUIRED, FOR WORK THAT IS IN CLOSE PROXIMITY TO THE AUTHORITY'S WATER MAINS, SUBMITTALS PREPARED BY A PROFESSIONAL ENGINEER AND REVIEWED BY THE MWRA ARE REQUIRED.
- PERMITTEE SHALL NOT EXPOSE THE SPRING LINE OR UNDERMINE THE MWRA'S PIPELINE. THE PERMITTEE OR ITS DESIGNEE SHALL CEASE EXCAVATION OPERATIONS AND SECURE THE OPEN TRENCH BY BACKFILLING THE OPEN TRENCH TO SECURE THE MWRA'S PIPELINE WHENEVER THE SPRING LINE IS EXPOSED.
- THE PERMITTEE SHALL MARK THE PROPOSED BORING AND TEST PIT LOCATIONS ON THE GROUND USING PAINT AND/OR STAKES AND SUBMIT ENGINEERING DOCUMENTS TO THE AUTHORITY SHOWING THE PROPOSED BORING AND TEST PIT LOCATIONS. AUTHORITY OPERATIONS STAFF WILL REVIEW ALL BORING AND TEST PIT LOCATIONS AT THE SITE.
- UPON WRITTEN CLEARANCE OF THE PROPOSED BORING AND TEST PIT LOCATIONS BY AUTHORITY OPERATIONS STAFF AND SUBJECT TO PERMITTEE PROVIDING THE AUTHORITY WITH SEVENTY-TWO (72) HOURS PRIOR NOTICE, PERMITTEE MAY COMMENCE WORK AT THE SITE.
- THE PERMITTEE SHALL BE RESPONSIBLE FOR THE LOCATIONS OF THE PROPOSED BORINGS AND TEST PITS REGARDLESS OF ANY ACT OR OMISSION OF THE AUTHORITY. THE PERMITTEE SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING, AT THE AUTHORITY'S ELECTION, THE AUTHORITY'S PROPERTY OR INFRASTRUCTURE, WHICH IS DAMAGED AS A RESULT OF THE PERMITTEE'S, ITS CONTRACTORS, AGENTS, REPRESENTATIVES, EMPLOYEES, AND/OR INVITEES ACTIVITIES PURSUANT TO THIS PERMIT. THE PERMITTEE'S OBLIGATIONS UNDER THIS PARAGRAPH SHALL INCLUDE PAYMENT TO THE AUTHORITY FOR ALL COSTS TO REPAIR ALL SUCH DAMAGE CAUSED TO THE AUTHORITY'S PROPERTY.

Legend

- Toro Weather Station with Wireless Communication
- Toro IN35-336-S, FC Setting VMI Sprinkler with LSM - Producing 24.4 gpm at 45 psi, 60" Spacing
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- Toro 220G-27-04DL, 1 1/2" Pressure Regulated Electric Valve
- Toro Bred 150-EFC-CP-PR5-D, 1 1/2" Pressure Regulated Electric Valve
- Mainline Valve Line Size
- 4" Lateral Valve
- 2" Lateral Valve
- DK 13.5-4710 HOPE Pipe, Size as Indicated
- 1 1/2" Pipe
- 12" Pipe
- 10" Pipe
- 8" Pipe
- 6" Pipe
- 4" Pipe
- 3" Pipe
- 2" DR 13.5 4710 HOPE Pipe

Notes:

- This schematic is intended only as a guide for the installation. It does not depict exact placement of the components. Final locations of irrigation components including but not limited to mainline routing, sprinklers, quick coupling valves & air release valves will be field staked.
- Irrigation contractor is responsible for their own site visit, measurements and material takeoffs.
- All green heads shall be 1" with 3" green loops.
- Fifteen (15) Valmatic Air Release Valves shall be allocated and shall be staked on site by irrigation consultant.
- Twenty (20) Quick Coupler Valves shall be allocated per hole and shall be staked on site by irrigation consultant and golf course superintendent. At a minimum there shall be one quick coupler valve installed on the live side of each green head and two on each green loop.



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Agua Agronomic Solutions, Inc.
Irrigation Design
1000
1000
1000

Hydraulic Layout