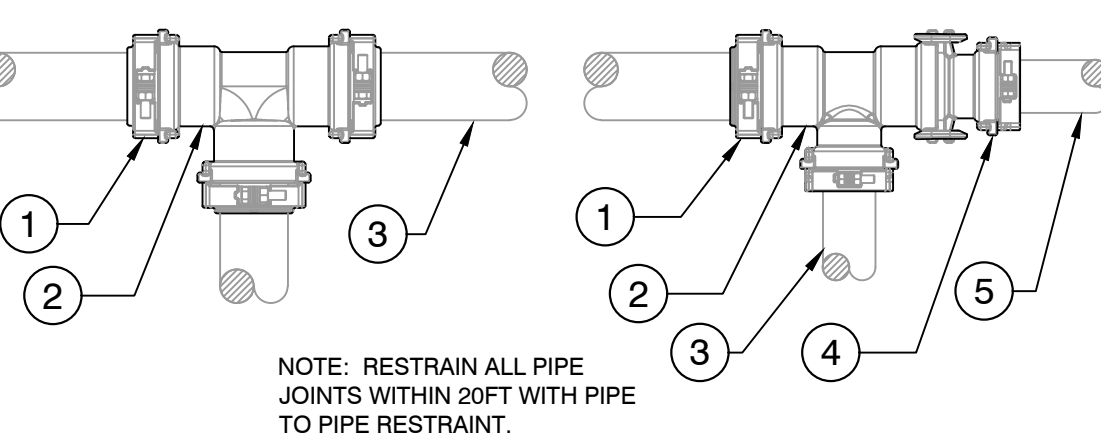
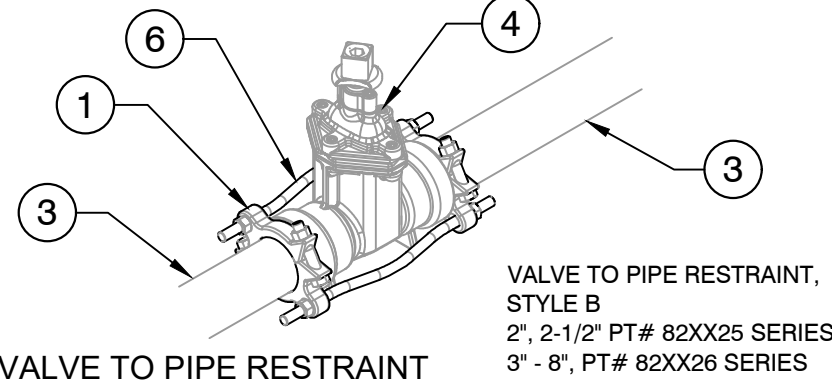


90 DEG BEND      45, 22-1/2, 11-1/4 BEND

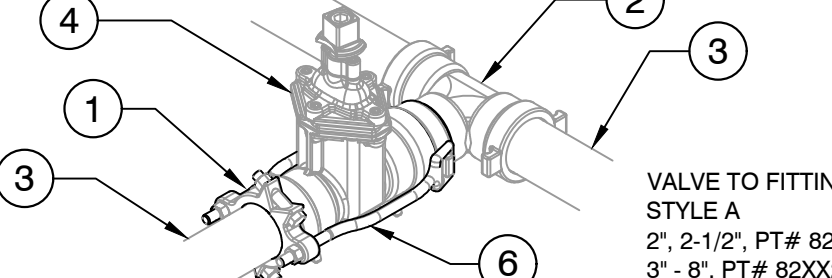


TEE RESTRAINT      11 HARCO FITTING TO PIPE JOINT RESTRAINT SYSTEM

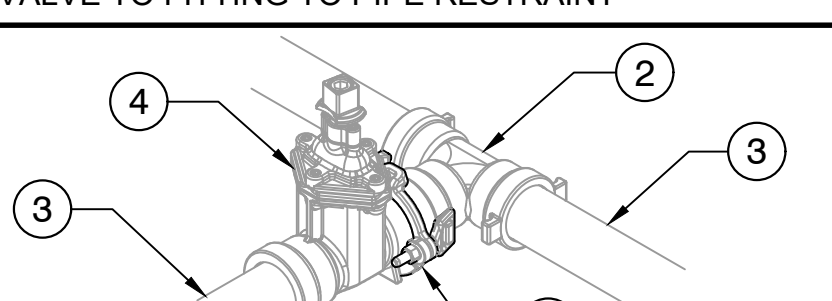
- 1 TYPICAL DUCTILE IRON GRIP RING AT PIPE.
  - 2 TYPICAL DUCTILE IRON FITTING WITH RESTRAINT LUGS. FITTINGS SHALL HAVE DEEP BELL PUSH-ON JOINTS WITH GASKETS.
  - 3 TYPICAL IPS PVC PIPE, PREPARED FOR FITTING AS PER NOTES AND MFG DIRECTIONS.
  - 4 SPIGOT END OF REDUCER INSERTING INTO THE BELL OF JOINT. "LOCK" REDUCER TO MAIN FITTING.
  - 5 REDUCED PIPE AS REQUIRED.
1. REVIEW THE MANUFACTURER PIPE PREPARATION DIRECTIONS FOR CUTTING THE PIPE, CLEANING, MARKING, LUBRICATING, AND ALIGNING AND FITTING.
  2. INSERT THE BEVELED SPIGOT PIPE INTO THE FITTING.
  3. ASSEMBLE GRIP RING ON PIPE AND TIGHTEN CLAMP BOLTS PER MFG DIRECTIONS.
  4. SLIDE 1-BOLTS THROUGH SLOTS IN GRIP RINGS AND AROUND FITTING LUGS, TIGHTEN TO MFG SPECS.



VALVE TO PIPE RESTRAINT, STYLE B



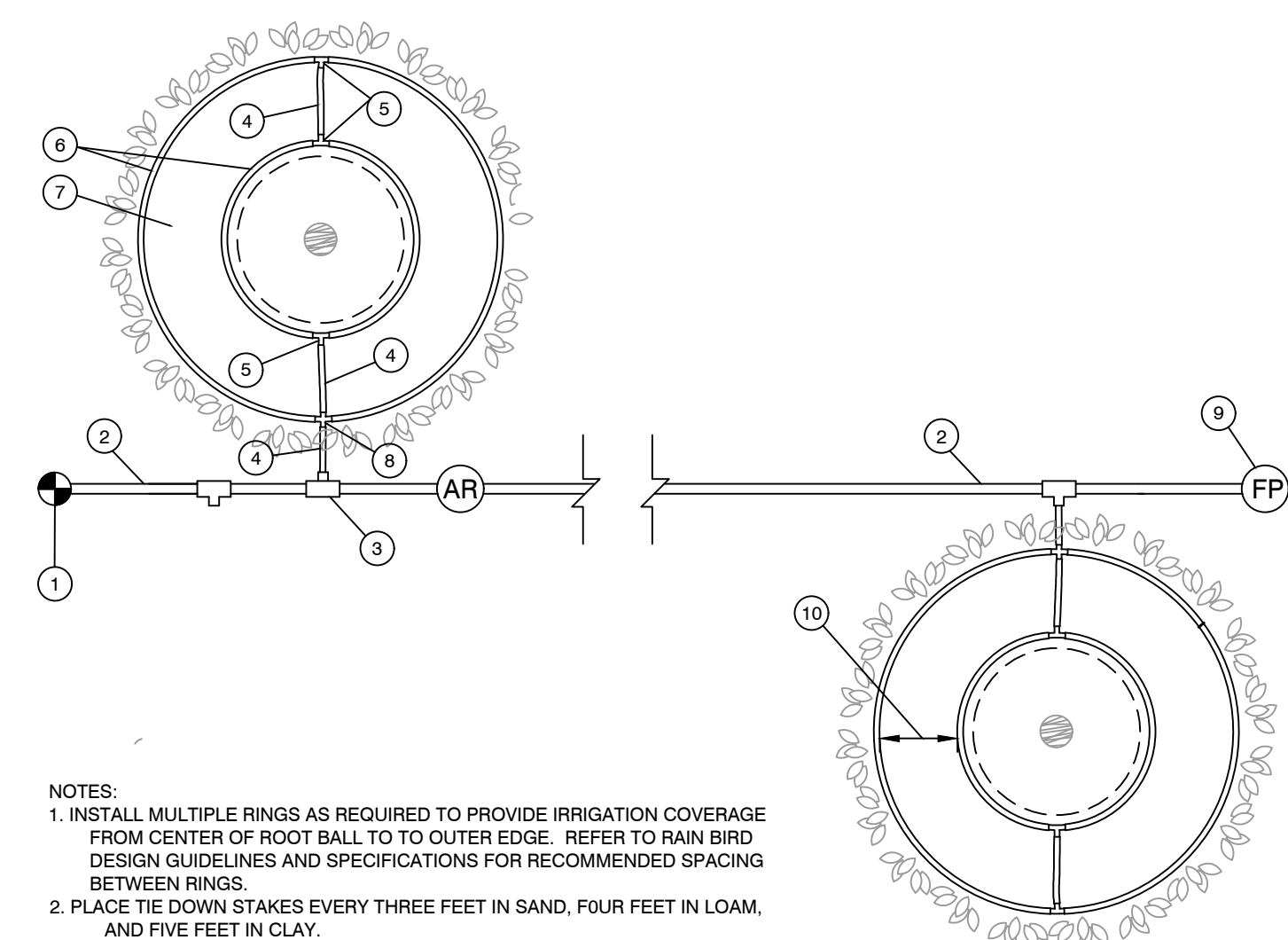
VALVE TO FITTING TO PIPE RESTRAINT, STYLE A



VALVE TO FITTING RESTRAINT

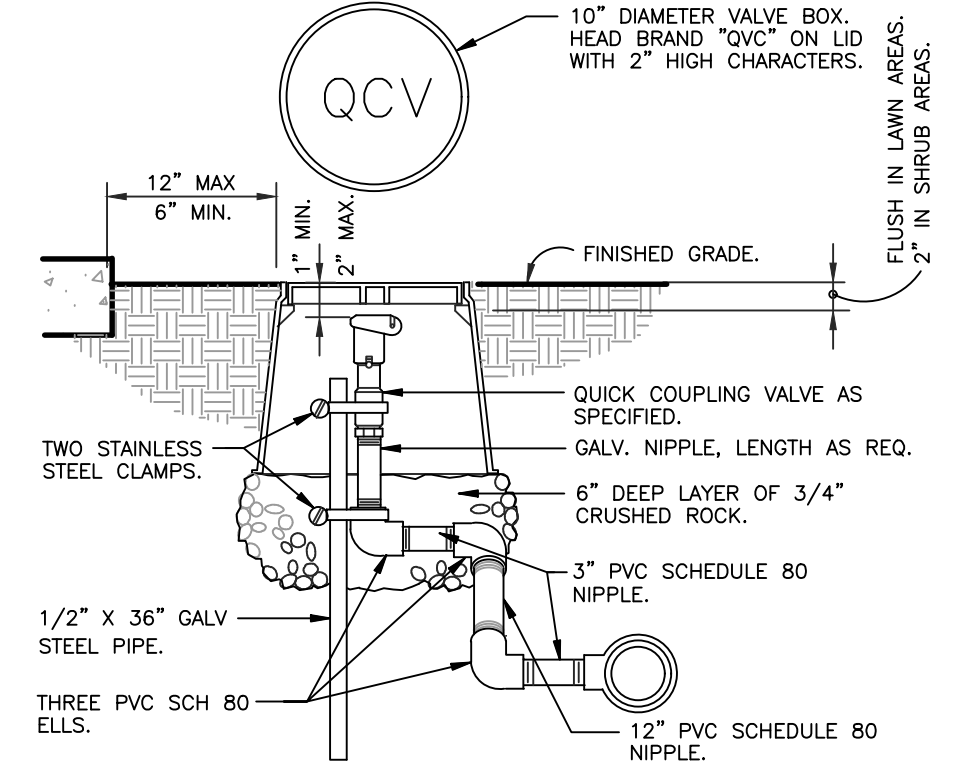
- 1 TYPICAL DUCTILE IRON GRIP RING AT PIPE.
  - 2 TYPICAL DUCTILE IRON FITTING WITH RESTRAINT LUGS. FITTINGS SHALL HAVE DEEP BELL PUSH-ON JOINTS WITH GASKETS.
  - 3 TYPICAL IPS PVC PIPE, PREPARED FOR FITTING AS PER NOTES AND MFG DIRECTIONS.
  - 4 DUCTILE IRON ISOLATION VALVE, PUSH-ON TYPE FOR USE WITH IPS PVC PIPE, WITH RESTRAINING RINGS.
  - 6 TYPICAL RESTRAINT BOLT ATTACHED TO EACH GRIP RING.
1. HARCO FITTINGS JOINT RESTRAINTS, PH (434) 845-7094. REVIEW THE MANUFACTURER PIPE PREPARATION DIRECTIONS FOR CUTTING THE PIPE, CLEANING, MARKING, LUBRICATING, AND ALIGNING AND FITTING.

12 HARCO VALVE TO PIPE/FITTING RESTRAINT SYSTEM

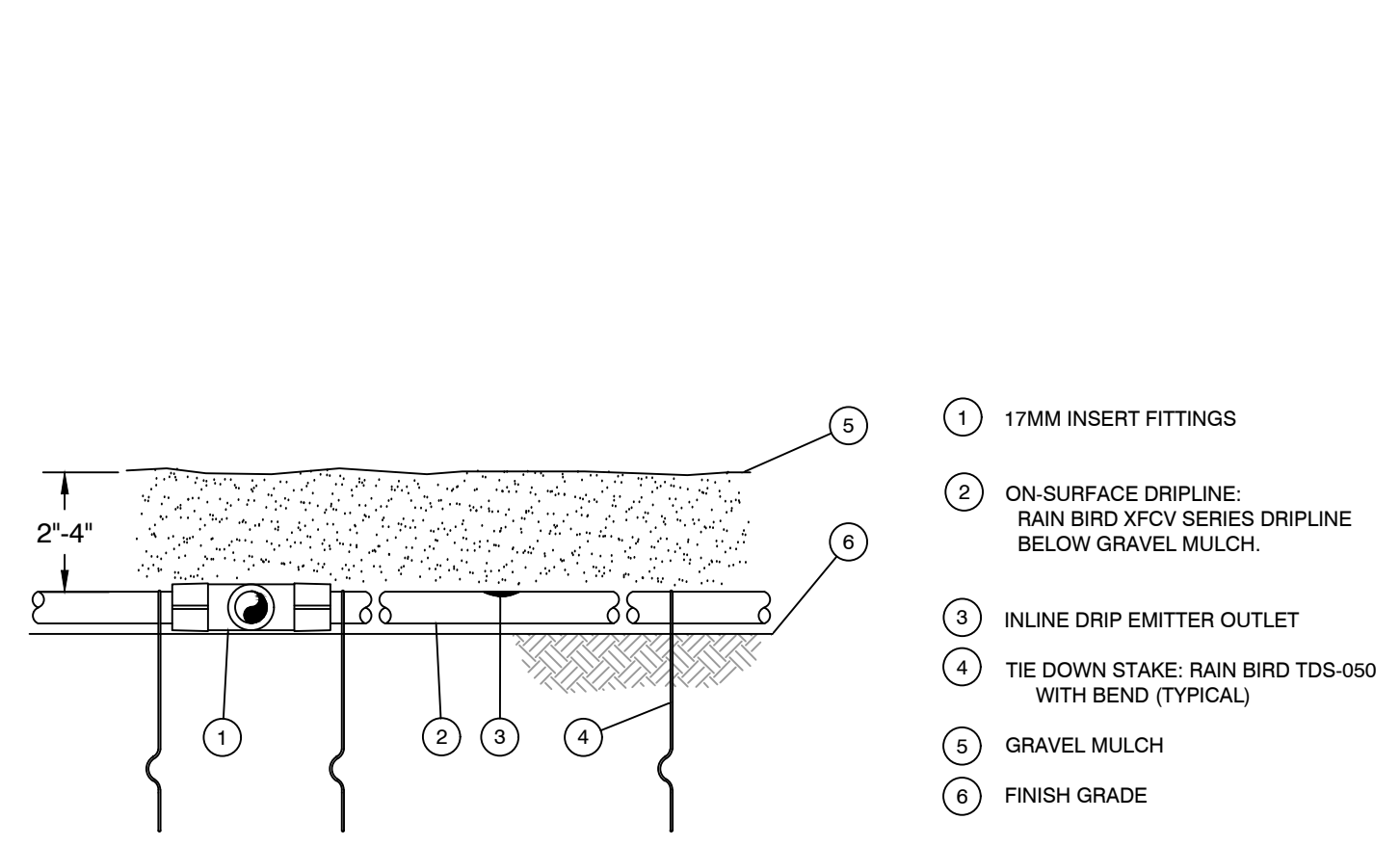


- 1 RAIN BIRD CONTROL ZONE KIT (SIZED TO ACCOMMODATE LATERAL FLOW DEMAND)
- 2 PVC DRIP MANIFOLD PIPE
- 3 PVC SCH 40 TEE OR EL (TYPICAL)
- 4 1/2" POLYETHYLENE TUBING: RAIN BIRD XF SERIES BLANK TUBING (TYPICAL)
- 5 BARB X BARB INSERT TEE: RAIN BIRD XFD-TEE (TYPICAL)
- 6 ON-SURFACE DRIPLINE: RAIN BIRD XF SERIES DRIPLINE
- 7 ROOT BALL (TYPICAL)
- 8 BARB X BARB INSERT CROSS: RAIN BIRD XFD-CROSS (TYPICAL)
- 9 DRIPLINE FLUSH POINT (SEE RAIN BIRD DETAIL: "XFD DRIPLINE FLUSH POINT WITH BALL VALVE")
- 10 DISTANCE VARIES: PLACE AT EDGE OF ROOT BALL

14 TREE IRRIGATION

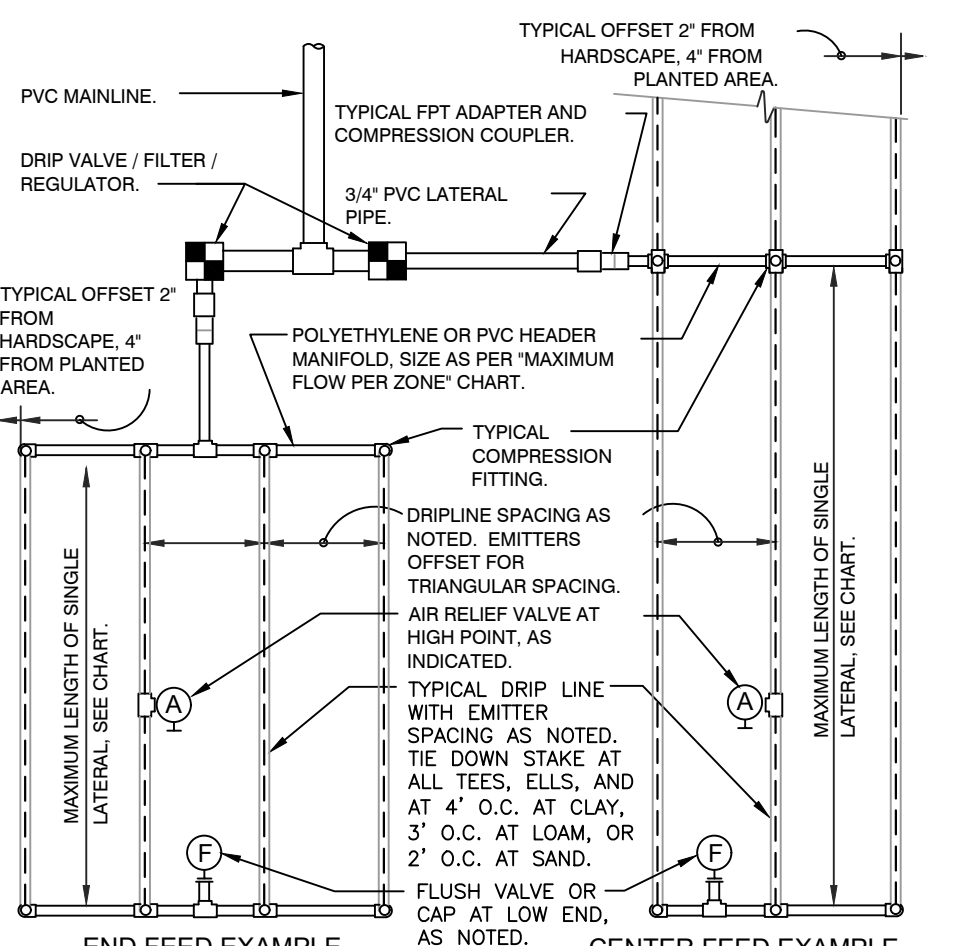


17 QUICK COUPLING VALVE IN BOX



- 1 17MM INSERT FITTINGS
- 2 ON-SURFACE DRIPLINE: RAIN BIRD XFCV SERIES DRIPLINE BELOW GRAVEL MULCH.
- 3 INLINE DRIP EMITTER OUTLET
- 4 TIE DOWN STAKE: RAIN BIRD TDS-050 WITH BEND (TYPICAL)
- 5 GRAVEL MULCH
- 6 FINISH GRADE

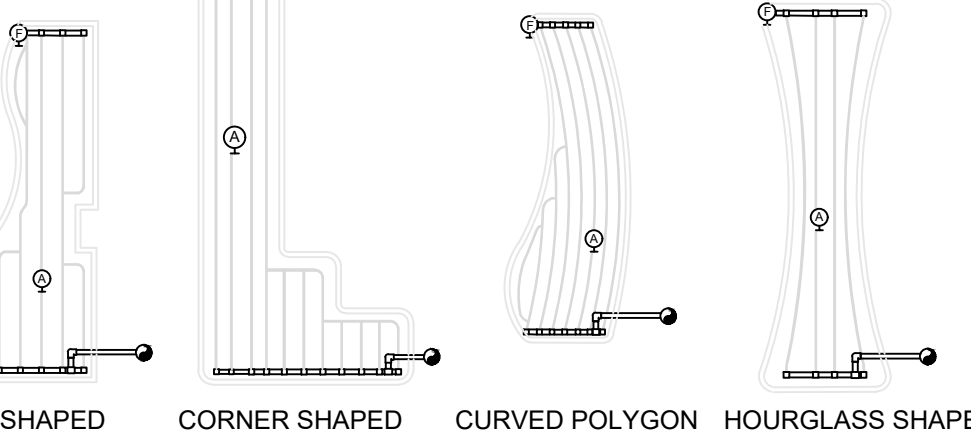
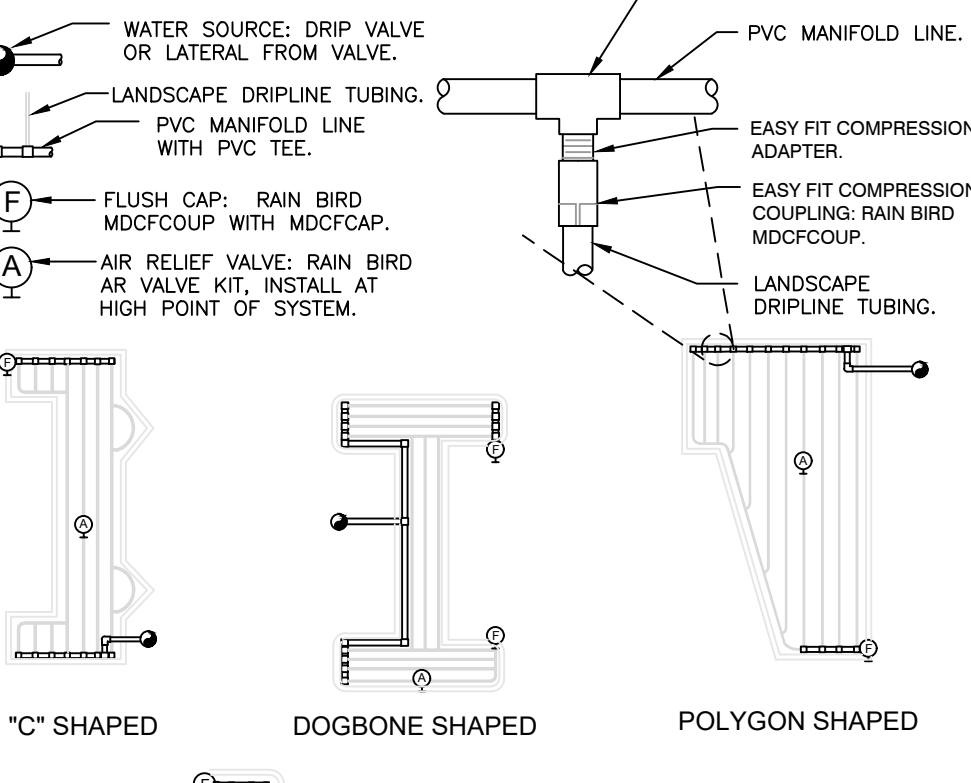
15 DRIPLINE ON GRADE



- SLOPED CONDITION NOTE:
1. DRIPLINE LATERALS SHOULD FOLLOW THE CONTOURS OF THE SLOPE WHENEVER POSSIBLE.
  2. INSTALL AIR RELIEF VALVE AT HIGHEST POINT.
  3. NORMAL SPACING WITHIN THE TOP 1/3 OF SLOPE.
  4. INSTALL DRIPLINE AT 25% GREATER SPACING AT THE BOTTOM 1/3 OF THE SLOPE.
  5. WHEN ELEVATION CHANGE IS 10 FT OR MORE, ZONE THE BOTTOM 1/3 ON A SEPARATE VALVE.

| GRID PRECIPITATION RATES (IN/HR) |                 | EMITTER FLOW RATE |      | MAXIMUM FLOW PER ZONE |          |
|----------------------------------|-----------------|-------------------|------|-----------------------|----------|
| EMITTER SPACING                  | LATERAL SPACING | 0.6               | 0.9  | MAX GPM               | PSI LOSS |
| 12                               | 12              | 0.86              | 1.44 | 4.7 GPM               | 7.7 PSI  |
| 18                               | 18              | 0.69              | 1.03 | 8.3 GPM               | 5.6 PSI  |
| 24                               | 24              | 0.28              | 0.41 | 13.5 GPM              | 4.2 PSI  |
|                                  |                 |                   |      | 33.9 GPM              | 2.9 PSI  |
|                                  |                 |                   |      | 52.4 GPM              | 1.9 PSI  |

| LATERAL FLOW PER 100 FT (GPM) |         | EMITTER FLOW RATE (GPM) |          | POLY PIPE HEADER SIZE |         |
|-------------------------------|---------|-------------------------|----------|-----------------------|---------|
| EMITTER FLOW                  | SPACING | EMITTER FLOW            | SPACING  | 1/2"                  | 3/4"    |
| 0.6 GPH                       | 1.0 GPM | 0.67 GPM                | 0.50 GPM | 4.7 GPM               | 8.8 PSI |
| 0.9 GPH                       | 1.5 GPM | 1.0 GPM                 | 0.75 GPM | 8.3 GPM               | 6.3 PSI |
|                               |         |                         |          | 13.5 GPM              | 4.8 PSI |
|                               |         |                         |          | 31.8 GPM              | 2.9 PSI |
|                               |         |                         |          | 52.4 GPM              | 2.2 PSI |



16 TYPICAL RAIN BIRD DRIPLINE REQUIREMENTS

| NO.  | ISSUED FOR | DATE     |
|------|------------|----------|
| REV# | REV NAME   | REV DATE |
| 1005 | CD/PLANS   | 11/14/18 |