

# PROPOSED WATERMAIN IMPROVEMENTS FOR L.C.P.W.D. - ARDEN SHORES ESTATES PW2011.065

PART OF SECTION 17, T 44 N, R 12 E  
CITY OF NORTH CHICAGO  
LAKE COUNTY, ILLINOIS

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### STANDARD SYMBOLS

#### PROPOSED

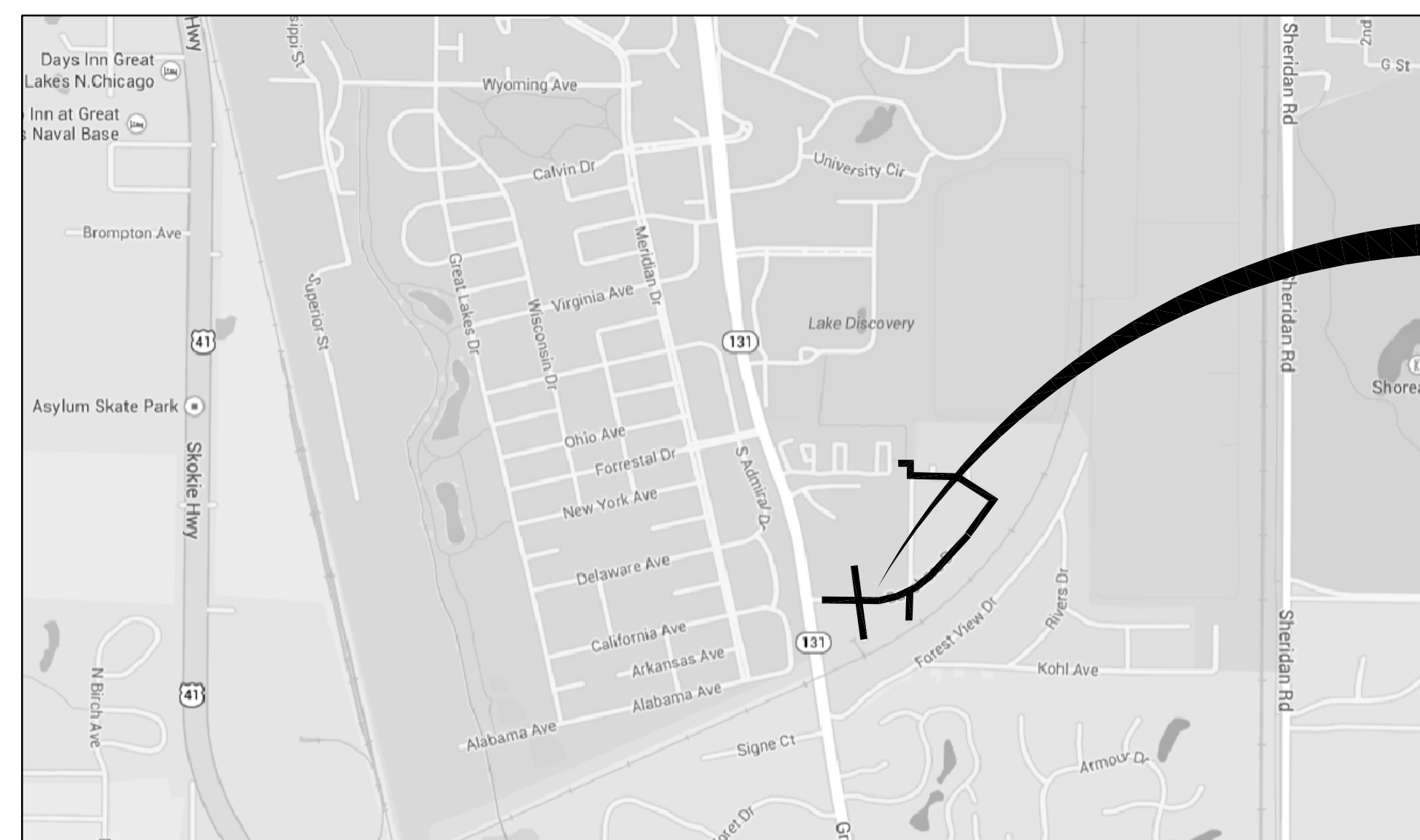
	SANITARY MANHOLE (M.H.)
	STORM MANHOLE OR INLET MANHOLE (M.H. or I.M.H.)
	CATCH BASIN (C.B.)
	INLET (INL.)
	VALVE & VAULT (V.V.)
	WATER SERVICE BOX
	FIRE HYDRANT (HYD.)
	HEADWALL OR FLARED END SECTION (F.E.S.)
	DITCH
	SWALE
	SANITARY SEWER
	STORM SEWER
	WATER MAIN
	STREET LIGHT
	SEE SHEET NUMBER
	SILT FENCE

#### EXISTING

	BENCHMARK
	SANITARY MANHOLE (M.H.)
	STORM MANHOLE OR INLET MANHOLE (M.H. or I.M.H.)
	CATCH BASIN (C.B.)
	INLET (INL.)
	VALVE & VAULT (V.V.)
	VALVE & BOX (V.B.)
	WATER SERVICE BOX
	FIRE HYDRANT (HYD.)
	HEADWALL OR FLARED END SECTION (F.E.S.)
	DITCH
	SWALE
	SANITARY SEWER
	STORM SEWER
	WATER MAIN
	STREET LIGHT

**BENCHMARK:** SOURCE BENCHMARK:  
NATIONAL GEODETIC SURVEY BM AJ2875.  
STAINLESS STEEL ROD IN SLEEVE. LOCATED ON ILL.  
ROUTE 137, 0.2 MILES EAST OF ILL. ROUTE 43 AND 35  
FEET SOUTH OF THE WESTBOUND CENTERLINE OF ILL.  
ROUTE 137 IN GRASS MEDIAN.  
ELEVATION = 707.81 (NAVD 88)

SEE PLAN & PROFILE SHEETS FOR LOCAL BENCHMARKS.



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#### EXISTING UTILITIES:

WHEN THE PLANS OR SPECIAL PROVISIONS INCLUDE INFORMATION PERTAINING TO THE LOCATION OF UNDERGROUND UTILITY FACILITIES, SUCH INFORMATION REPRESENTS ONLY THE OPINION OF THE ENGINEER AS TO THE LOCATION OF SUCH UTILITIES AND IS ONLY INCLUDED FOR THE CONVENIENCE OF THE BIDDER. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER IN RESPECT TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS RELATIVE TO THE LOCATION OF UNDERGROUND UTILITY FACILITIES OR THE MANNER IN WHICH THEY ARE TO BE REMOVED OR ADJUSTED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES. HE SHALL ALSO OBTAIN FROM THE REPRESENTATIVE UTILITY COMPANIES DETAILED INFORMATION RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULES OF THE UTILITY COMPANIES FOR REMOVING OR ADJUSTING THEM.

SOLE PROPERTY OF GREENGARD, INC. AND NO REPRODUCTION OR USE, IN WHOLE OR PART WITHOUT WRITTEN PERMISSION OF GREENGARD, INC.	DMW DRAWN BY: 5-13-16 DATE: PER LCPW REVIEW	REVISIONS DRAWN BY: DATE: REVISIONS	DESIGNED BY: MRT/DMW DATE: 4-26-16 CHECKED BY: DRF DATE: 4-26-16 APPROVED BY: DMW DATE: 4-26-16	 <b>GREENGARD, INC.</b> Engineers • Surveyors • Planners 111 Barclay Blvd., Suite 310, Lincolnshire, Illinois 60069-3623 PHONE: 847-634-3883 FAX: 847-634-0687 E-MAIL: 231@GREENGARDINC.COM ILL. REGISTRATION NO. 184-000995	SCALE: N.T.S. DRAWING No. 57161 SHEET 1 of 14	<b>LCPWD - ARDEN SHORES ESTATES - WATERMAIN</b>  <b>TITLE SHEET</b>
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## GENERAL NOTES

1. THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", DEPARTMENT OF TRANSPORTATION, STATE OF ILLINOIS, AS ADOPTED JANUARY 1, 2007; THE "SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS" (SIXTH EDITION) DATED JULY 2009; AND THE LAKE COUNTY PUBLIC WORKS CODES AND ORDINANCES ARE INCORPORATED HEREIN BY REFERENCE AND SHALL BE REFERRED TO AS THE "STANDARD SPECIFICATIONS". IN CASE OF CONFLICT, THE LAKE COUNTY PUBLIC WORKS CODES AND ORDINANCES SHALL GOVERN.
2. WATER MAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR SEWER AND WATER MAIN CONSTRUCTION IN ILLINOIS" (LATEST EDITION); AND THE CITY OF NORTH CHICAGO AND L.C.P.W.D. CODES AND ORDINANCES CURRENTLY IN EFFECT.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AFFECTING THEIR WORK WITH THE ACTUAL CONDITIONS AT THE PROJECT SITE. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER BEFORE ANY WORK IS PERFORMED; OTHERWISE, THE CONTRACTOR ASSUMES FULL RESPONSIBILITY. IN THE EVENT OF DISCREPANCIES OR OMISSIONS ON THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL GET WRITTEN INSTRUCTIONS FROM THE ENGINEER PRIOR TO PROCEEDING WITH ANY PART OF THE WORK AFFECTED. FAILING TO GET SUCH INSTRUCTION, THE CONTRACTOR WILL BE PROCEEDING AT HIS OWN RISK AND EXPENSE.
4. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE GUARANTEED AGAINST ALL DEFECTS IN MATERIALS AND WORKMANSHIP BY THE CONTRACTOR.
5. BEFORE ACCEPTANCE BY THE OWNER AND FINAL PAYMENT, ALL WORK SHALL BE INSPECTED AND APPROVED BY THE LAKE COUNTY PUBLIC WORKS DEPARTMENT. FINAL PAYMENT WILL BE MADE AFTER ALL OF THE CONTRACTOR'S WORK HAS BEEN APPROVED AND ACCEPTED BY LAKE COUNTY PUBLIC WORKS DEPARTMENT.
6. WHEN THE PLANS INCLUDE INFORMATION PERTAINING TO THE LOCATION OF UNDERGROUND UTILITY FACILITIES, SUCH INFORMATION REPRESENTS ONLY THE OPINION OF THE ENGINEER AS TO THE LOCATION OF SUCH UTILITIES AND IS ONLY INCLUDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY WHATSOEVER IN RESPECT TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS RELATIVE TO THE LOCATION OF UNDERGROUND UTILITY FACILITIES OR THE MANNER IN WHICH THEY ARE TO BE REMOVED OR ADJUSTED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES. HE SHALL ALSO OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE UTILITY COMPANIES FOR REMOVING OR ADJUSTING THEM.
7. THE CONTRACTOR AGREES TO INDEMNIFY AND HOLD THE MUNICIPALITY, OWNERS, AND ENGINEER HARMLESS FROM ALL LIABILITY AND EXPENSIVE TO THE CONTRACTOR FOR DEFENDING ACTIONS ARISING OUT OF THE PERFORMANCE OF THE WORK OR OUT OF ANY CLAIM BY ANY SUBCONTRACTOR OR ANYONE WHO FURNISHES MATERIAL OR LABOR.
8. WHENEVER, DURING CONSTRUCTION OPERATIONS, ANY LOOSE MATERIAL IS DEPOSITED IN THE FLOW LINES, DITCHES, ETC., SUCH THAT THE NATURAL FLOW LINE OF WATER IS OBSTRUCTED, THIS LOOSE MATERIAL SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY BY THE RESPONSIBLE PARTY. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES AND FLOW LINES SHALL BE FREE FROM DIRT AND DEBRIS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ADEQUATE SIGNS, TRAFFIC CONTROL DEVICES, AND WARNING DEVICES TO INFORM AND PROTECT THE PUBLIC DURING ALL PHASES OF CONSTRUCTION. ADEQUATE LIGHTING SHALL BE MAINTAINED FROM DUSK TO DAWN AT LOCATIONS WHERE CONSTRUCTION OPERATIONS WARRANT, OR AS DESIGNATED BY THE ENGINEER OR MUNICIPALITY. ALL TRAFFIC CONTROL WORK SHALL BE DONE IN ACCORDANCE WITH THE I.D.O.T. "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
10. REMOVED PAVEMENT, SIDEWALK, CURB AND GUTTER, ETC., SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS OWN EXPENSE AT LOCATIONS APPROVED BY THE ENGINEER. IF ON-SITE DISPOSAL IS NOT FEASIBLE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN OFF-SITE DUMP SITE AT HIS OWN EXPENSE.
11. WHERE OVERHANGING BRANCHES INTERFERE WITH OPERATIONS OF CONSTRUCTION, SAID BRANCHES SHALL BE TRIMMED AND SEALED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AND THE COST SHALL BE INCIDENTAL TO THE CONTRACT. TREES SHALL BE REMOVED ONLY AFTER RECEIVING APPROVAL OF THE OWNER. THE OWNER SHALL DESIGNATE THOSE TREES WHICH ARE TO BE REMOVED. A CONTRACTOR REMOVING TREES WITHOUT THE OWNER'S APPROVAL WILL BE RESPONSIBLE FOR REPLACEMENT OF SAID TREE(S) AS DIRECTED BY THE OWNER AT THE CONTRACTOR'S EXPENSE.
12. ALL EXISTING TRAFFIC SIGNS, STREET SIGNS, ETC., WHICH INTERFERE WITH CONSTRUCTION OPERATIONS AND ARE NOT NOTED FOR REMOVAL OR DISPOSAL SHALL BE REMOVED AND RESET BY THE CONTRACTOR AT LOCATIONS AS DESIGNATED BY THE ENGINEER. THIS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE MADE. DAMAGE TO THESE ITEMS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL SIGNS NOT REQUIRED TO BE RESET SHALL BE DELIVERED TO THE VILLAGE, CITY, OR COUNTY AS APPROPRIATE. IN ADDITION, ALL MAIL BOXES THAT INTERFERE WITH CONSTRUCTION SHALL BE SIMILARLY RELOCATED AT NO ADDITIONAL COST.
13. ALL FIELD TILE ENCOUNTERED DURING CONSTRUCTION OPERATIONS SHALL BE RECONNECTED. IF THIS CANNOT BE ACCOMPLISHED, THEN IT SHALL BE REPAIRED WITH NEW PIPE, OF A SIZE AND MATERIAL APPROVED BY THE ENGINEER, AND PUT BACK IN ACCEPTABLE OPERATING CONDITION. A RECORD OF THE LOCATION OF ALL FIELD TILE FOR ON-SITE DRAIN PIPE ENCOUNTERED SHALL BE KEPT BY THE CONTRACTOR AND TURNED OVER TO THE ENGINEER UPON COMPLETION OF THE PROJECT. THE COST OF THIS WORK SHALL BE CONSIDERED AS INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE MADE.
14. IT SHALL BE THE RESPONSIBILITY OF EACH RESPECTIVE CONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.
15. THE ENGINEER AND OWNER ARE NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, TIME OF PERFORMANCE, PROGRAMS, OR ANY SAFETY PRECAUTIONS USED BY THE CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXECUTION OF HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
16. ELECTRIC, TELEPHONE, NATURAL GAS, AND OTHER UTILITY COMPANIES HAVE UNDERGROUND AND/OR OVERHEAD SERVICE FACILITIES IN THE VICINITY OF THE PROPOSED WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING THE UTILITY COMPANIES LOCATE THEIR FACILITIES IN THE FIELD PRIOR TO CONSTRUCTION AND SHALL ALSO BE RESPONSIBLE FOR THE PRESERVATION OF THESE FACILITIES. THE CONTRACTOR SHALL CALL J.U.L.I.E. AT (800) 892-0123 FOR UTILITY LOCATIONS TWO WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION.
17. THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER BEFORE BEGINNING CONSTRUCTION THAT THE PLANS AND SPECIFICATIONS HE HAS BEEN PROVIDED ARE CURRENT.
18. THE CONTRACTOR SHALL KEEP A SET OF "APPROVED" CONSTRUCTION PLANS ON THE JOB SITE. HE SHALL MAINTAIN A LEGIBLE RECORD ON THESE PLANS OF ANY FIELD TILE ENCOUNTERED OR ANY MODIFICATIONS OR ALTERATIONS TO HIS WORK. THESE PLANS AND THIS INFORMATION SHALL BE PROVIDED TO ENGINEER AT THE COMPLETION OF THE CONTRACTORS' WORK AND BEFORE FINAL PAYMENT WILL BE APPROVED.
19. THE CONTRACTOR SHALL NOTIFY THE CITY OF NORTH CHICAGO, LAKE COUNTY PUBLIC WORKS, AND GREENGARD, INC. FORTY-EIGHT (48) HOURS PRIOR TO COMMENCING ANY CONSTRUCTION.
20. ERECT EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO ANY CONSTRUCTION/GRADING.
21. ALL DISTURBED AREAS TO BE STABILIZED WITHIN SEVEN (7) DAYS OF THE END OF HYDROLOGIC DISTURBANCE.

## WATER MAIN NOTES

1. ALL WATER SERVICES SHALL BE ONE INCH (1") DIAMETER COPPER, ASTM B-88-58, TYPE K, WITH "B-BOXES", AND BE LOCATED AS SHOWN ON THE PLANS. A MINIMUM BURY OF FIVE AND ONE-HALF FEET (5-1/2') SHALL BE REQUIRED FROM FINISHED GRADE TO CURB STOPS, UNLESS OTHERWISE NOTED.
  2. THE CONTRACTOR SHALL INSTALL A FOUR-INCH BY FOUR-INCH BY EIGHT-FOOT (4" X 4" X 8') POST OR A FOUR-INCH (4") DIAMETER BY EIGHT-FEET (8') POST, THE TOP EIGHTEEN INCHES (18") OF THE POST PAINTED BLUE, TO MARK THE LOCATION OF EACH BUFFALO BOX AND LINE VALVE. TOP OF POST SHALL BE PLUMB AND THREE FEET (3') ABOVE FINISHED GRADE. POSTS WHICH ARE DESTROYED, BROKEN, OR PULLED OUT SHALL BE REPLACED BY THE CONTRACTOR.
  3. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A TABULAR LISTING OF EACH AND EVERY SERVICE CONNECTION AND THEIR LOCATIONS RELATIVE TO PERMANENT FIXED OBJECTS SUCH AS MANHOLES, FIRE HYDRANTS, STREET LIGHTS, ETC. EACH SERVICE CONNECTION SHALL BE ACCURATELY LOCATED BY A SERIES OF THREE (3) PRECISE INTERSECTING LOCATION MEASUREMENTS. THE DEPTH AS MEASURED FROM FINISHED GRADE SHALL ALSO BE PROVIDED.
  4. ALL WATER MAINS SHALL HAVE A MINIMUM OF FIVE AND ONE-HALF FEET (5-1/2') COVER MEASURED FROM THE TOP OF THE MAIN TO FINISHED GRADE. UNLESS OTHERWISE NOTED.
  5. WATER MAIN FITTINGS SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE OF THE PIPE.
  6. ALL FITTINGS, TEES, BENDS, ETC. NECESSARY FOR THE CONSTRUCTION OF THE WATER MAIN SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR WATER MAIN. THE CONTRACTOR IS RESPONSIBLE TO FURNISH ALL FITTINGS, TEES, BENDS, ETC. NECESSARY TO COMPLETE THE WATER MAIN CONSTRUCTION IN ACCORDANCE WITH THE PLANS, WITH THE UNDERSTANDING THAT SUCH ITEMS MAY NOT BE LABELED ON THE PLANS.
  7. THRUST BLOCKING SHALL BE INSTALLED ON WATER MAINS AT ALL BENDS, TEES, ELBOWS, ETC.
  8. WATER MAIN FITTINGS SHALL BE INSTALLED USING BUTT-FUSED FITTINGS, THERMO-FUSED FITTINGS/COUPLINGS, OR FLANGED ADAPTERS AND MUST BE APPROVED BY LAKE COUNTY PUBLIC WORKS AND CONFORM TO ASTM D-3261.
  9. WATER MAIN WHERE INDICATED SHALL BE FURNISHED AND INSTALLED USING THE HORIZONTAL DIRECTIONAL DRILLING (HDD) METHOD OF INSTALLATION, ALSO COMMONLY REFERRED TO AS DIRECTIONAL BORING OR GUIDED HORIZONTAL BORING.
  10. UTILITY POLES TO BE BRACED AS NECESSARY (COST INCIDENTAL). CONTRACTOR TO CONTACT UTILITY COMPANIES FOR REQUIREMENTS.
  11. THE CONTRACTOR SHALL EXERCISE CARE WHEN WORKING AROUND EXISTING TREES AND BUSHES. ANY TREE OR BUSH DAMAGED OR DESTROYED BY CONTRACTOR'S WORK ACTIVITY SHALL BE REPLACED IN KIND AS DIRECTED BY THE ENGINEER. COST INCIDENTAL.
  12. THE ALIGNMENT/DEPTH OF PROPOSED WATER MAIN MAY REQUIRE ADJUSTMENT DURING COURSE OF CONSTRUCTION DUE TO THE LOCATION OF EXISTING UTILITIES, ETC. CONTRACTOR SHALL RECEIVE APPROVAL FOR ANY ALIGNMENT/DEPTH REVISIONS FROM THE ENGINEER PRIOR TO UNDERTAKING SAID WORK.
  13. ALL CONSTRUCTION ACTIVITY SHALL BE LIMITED TO WITHIN THE PUBLIC RIGHT-OF-WAY (ROW) OR UTILITY/CONSTRUCTION EASEMENTS UNLESS OTHERWISE NOTED ON DRAWINGS.
  14. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL INSTALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AS DELINEATED ON THE DRAWINGS AND AS SPECIFIED.
  15. WATER PUMPED FROM TRENCHES, EXCAVATIONS, ETC. SHALL HAVE SUSPENDED SOLIDS REDUCED TO LIMITS NOTED IN THE SPECIFICATIONS PRIOR TO DISCHARGE INTO WATERWAYS, BODIES OF WATERS, STORM SEWERS, ETC. (COST INCIDENTAL).
  16. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO CONTROL DUST AND MUD ASSOCIATED WITH THIS PROJECT.
  17. ORANGE CONSTRUCTION FENCING AND CONSTRUCTION BARRIERS IN OPEN CUT ROADWAYS SHALL BE PLACED AROUND ANY PIT THAT WILL REMAIN OPEN OVERNIGHT WITHIN THE RIGHT-OF-WAY.
  18. NO EXISTING RESIDENTIAL/BUSINESS DRIVEWAY SHALL BE BLOCKED FOR MORE THAN 2 HOURS. CONTRACTOR IS TO GIVE PROPERTY OWNER A MINIMUM OF 24 HOURS NOTICE PRIOR TO CLOSING ANY DRIVEWAYS. DOOR HANGERS ARE TO BE USED TO NOTIFY PROPERTY OWNERS.
  19. FOLLOWING DRILLING OPERATIONS, CONTRACTOR WILL DE-MOBILIZE EQUIPMENT AND RESTORE THE WORK-SITE TO THE ORIGINAL CONDITION. ALL EXCAVATIONS WILL BE BACKFILLED AND COMPACTED TO 80% OF ORIGINAL DENSITY. LANDSCAPING WILL BE RESTORED TO ORIGINAL CONDITIONS. ALL SPOILS SHALL BE DISPOSED OF BY THE CONTRACTOR.
- RESTORATION:
- A) LAWNS - 4" TOPSOIL, SOD, & WATERING.
  - B) NATURAL AREAS - 4" TOPSOIL
  - C) ASPHALT STREETS - 1. SAW CUT LIMITS  
2. BACKFILL WITH CA-6 AGGREGATE BASE COURSE  
3. 6" BAM PATCH  
4. 2" BITUMINOUS CONCRETE CLASS I BINDER COURSE  
5. 1.5" BITUMINOUS CONCRETE CLASS I SURFACE COURSE.
  - D) ASPHALT DRIVEWAY RESTORATION SHALL BE INCIDENTAL.

20. ALL STRUCTURES SHALL BE TESTED IN ACCORDANCE WITH ASTM C1244-93 OR C969-94 FOR WATER TIGHTNESS. COST OF TESTING SHALL BE INCIDENTAL.
  21. THE CONTRACTOR SHALL VERIFY THAT THE PIPE OR REQUIRED IS ADEQUATE BASED ON THE PROPOSED INSTALLATION PROCEDURES. THIS WOULD INCLUDE TENSILE PULL LOAD, INSTALLATION BENDING STRESS, INSTALLATION COMPRESSIVE BENDING STRESS AND EXTERNAL DIFFERENTIAL PRESSURE COLLAPSE/BUCKLING RESISTANCE. THE DR USED SHALL BE THE LOWER OF THAT SPECIFIED BY THE ENGINEER OR THAT REQUIRED BY THE ABOVE ANALYSIS.
  22. DIRECTIONAL DRILLING LOGS SHALL BE KEPT BY THE CONTRACTOR GIVING THE HORIZONTAL AND VERTICAL POSITION OF THE PIPE AT 25 FOOT INTERVALS ALONG THE PIPE ALIGNMENT TO CONFIRM ITS CONFORMANCE TO THE SPECIFIED DEPTH AND LINE ON THE CONTRACT DRAWINGS. NO PAYMENT FOR ANY LENGTH OF PIPE SHALL BE MADE WITHOUT A LOG ACCOMPANYING IT. THE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS.
  23. THE CONTRACTOR SHALL OBTAIN A HYDRANT METER FROM THE LAKE COUNTY PUBLIC WORKS DEPARTMENT. THE METER SHALL BE INSTALLED SO THAT WATER FOR FLUSHING AND/OR OTHER PURPOSES CAN BE METERED.
  24. CONTRACTOR MAY USE SPLIT BOTTOM BASE TO FACILITATE INSTALLATION OF THE VALVE VAULT REQUIRED FOR THE PRESSURE TAPPING SLEEVE AND VALVE.
  25. EXTERNAL CHIMNEY SEALS ARE REQUIRED ON VALVE VAULTS (CRETEX OR APPROVED EQUAL).
  26. VALVE VAULTS SHALL BE PROVIDED WITH ADJUSTING RINGS NO LESS THAN TWO INCH (2") HIGH AND NO MORE THAN A TOTAL OF TEN INCHES (10") HIGH.
  27. BACTERIAL TESTING FOLLOWING DISINFECTION SHALL BE PERFORMED EITHER BY THE LOPWD OR OTHER IEPA CERTIFIED LABORATORY WITH ORIGINAL SAMPLE SHEETS SUPPLIED. IN THE EVENT ONE OF MORE OF THE SAMPLING TESTS ARE UNSATISFACTORY LCPWD RETAINS THE RIGHT TO TAKE OVER THE SAMPLING PROCESS.
  28. FUSIBLE PVC, AWWA C900, DR-14, DUCTILE IRON PIPE SIZE. PVC SHALL BE JOINED BY BUTT HEAT FUSION METHOD (PER PATENT NO. 6,982,051). PIPE SHALL HAVE APPROPRIATELY SIZED BURIED CONCRETE PIPE ANCHORS WHERE PIPE TERMINATES OR WHERE CONNECTION ARE MADE TO UN-RESTRAINED PIPE. WHERE PVC PIPE CONNECTS TO MECHANICAL JOINT PIPE AND REQUIRES A JOINT RESTRAINT, A PVC PIPE APPROPRIATE JOINT RESTRAINT SYSTEM SHALL BE PROVIDED. (MUELLER AQUAGRIP SYSTEM OR APPROVED EQUAL). INSTALLATION OF FUSED PVC PIPE SHALL COMPLY WITH MANUFACTURER REQUIREMENTS/RECOMMENDATIONS.
  29. RESTRAINED JOINT PVC WITH O-RING GASKET JOINT, AWWA C900, DR-14, DUCTILE IRON PIPE SIZE. PVC PIPE SHALL BE RESTRAINED JOINT INTEGRAL BELL (RJB) PIPE MANUFACTURED BY CERTA-LOK, INSTALLATION OF FUSED PVC PIPE SHALL COMPLY WITH MANUFACTURE REQUIREMENTS/RECOMMENDATIONS.
  30. THE HORIZONTAL DIRECTIONAL DRILLING (HDD) CONTRACTOR SHALL HAVE 5 YEARS (MIN.) EXPERIENCE INSTALLING ANY OF THE ABOVE LISTED PIPE MATERIALS BY THE HDD METHOD.
  31. ALL WATERMAIN PIPE SHALL BE INSTALLED WITH A CONTINUOUS LOCATOR WIRE; 3/16" BARE CABLE DIAMETER, 7X19 STRAND CORE TYPE 304 STAINLESS STEEL WIRE ROPE, NYLON COATED INSTALLED ALONG WITH PIPELINE. WIRE IS TO BE CONTINUOUS THROUGH ALL VALVE VAULTS, ETC. PROVIDE EXOTHERMIC (CAD) WELDS AT ALL SPLICES; REPAIR NYLON COATING AT ALL SPLICES PER MANUFACTURERS RECOMMENDATION AND MAKE WATERIGHT. ALL LOCATOR WIRE SHALL BE TESTED FOR CONDUCTIVITY PRIOR TO FINAL ACCEPTANCE; ANT LOCATOR WIRE THAT DOES NOT PROVIDE ADEQUATE SIGNAL SHALL BE REPAIRED OR REPLACED.
  32. PROVIDE JOINT RESTRAINT AT ALL FITTINGS (MUELLER AQUAGRIP SYSTEM OR APPROVED EQUAL). PROVIDE TYPE 304 STAINLESS STEEL TEE BOLTS, WASHERS AND NUTS AT ALL FITTING. THREADS ON ALL TEE BOLTS AND NUTS SHALL BE COATED WITH A MARINE GRADE ANTI-SEIZE/LUBRICATING COMPOUND.
  33. ANY WATERMAIN PIPE INSTALLED BY OPEN CUT CONSTRUCTION SHALL BE BEDDED CA-6 GRADE 8 OR 9, 100% CRUSHED.
  34. GATE VALVE SHALL BE MUELLER RESILIENT WEDGE, MODEL A-2361.
  35. FIRE HYDRANTS SHALL BE MUELLER SUPER CENTURION MODEL. PROVIDE 2 FOOT SEPARATION BETWEEN HYDRANT AND AUXILIARY VALVE.
  36. SERVICE SADDLE FOR PVC PIPE SHALL BE SMITH-BLAIR MODEL 372.
  37. MAINTAIN 25 FEET SEPARATION (MIN.) BETWEEN THE PROPOSED WATERMAIN AND ANY EXISTING SEPTIC SYSTEM.
  38. WATERMAIN SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST OF 150 PSI FOR 2 HOURS. ALLOWABLE LEAKAGE FOR O-RING GASKET JOINT PVC PIPE SHALL BE PER AWWA C605; MAXIMUM ALLOWABLE PRESSURE LOSS DURING THE 2 HOUR TEST IS 5 PSI. THERE IS NO ALLOWABLE LEAKAGE FOR HEAT FUSED HDPE OR PVC PIPE AS PROPERLY MADE HEAT FUSED JOINTS DO NOT LEAK.
  39. WATERMAIN DISINFECTION AND FINAL FLUSHING SHALL BE IN ACCORDANCE WITH AWWA C651, AND THE CITY OF NORTH CHICAGO AND LCPWD REQUIREMENTS.
  40. EXISTING WATERMAIN IS TO BE ABANDONED IN PLACE.
  41. EXISTING VALVES AND FLUSHING HYDRANTS ARE TO BE REMOVED ONCE ALL NEW RESIDENCES HAVE BEEN CONNECTED TO THE NEW WATER MAIN.
  42. WATER SERVICE CONNECTIONS TO EACH RESIDENCE ARE TO BE PERFORMED BY A LICENSED PLUMBER IN THE STATE OF ILLINOIS.
- ALTERNATE WATER MAIN PIPING:**
43. FUSIBLE HDPE, AWWA C906, DR-11, WATER PRESSURE RATING 160, DUCTILE IRON PIPE SIZE. HDPE PIPE SHALL BE JOINED BY EITHER BUTT HEAT FUSION METHOD (PER ASTM D2657) OR BY USE OF ELECTROFUSION COUPLINGS (PER ASTM F1055). PIPE SHALL HAVE APPROPRIATELY SIZED BURIED CONCRETE PIPE ANCHORS WHERE PIPE TERMINATES OR WHERE CONNECTION ARE MADE TO UN-RESTRAINED PIPE. HDPE PIPE THAT CONNECTS TO A MECHANICAL JOINT WILL INCLUDE A JOINT RESTRAINT, AND THE HDPE PIPE SHALL INCORPORATE A SOLID STAINLESS STEEL PIPE STIFFENER THAT FITS INSIDE THE HDPE PIPE. JOINT RESTRAINT SYSTEM SHALL PROVIDE FULL CIRCUMFERENCE CLAMPING (MUELLER AQUAGRIP SYSTEM OR APPROVED EQUAL). INSTALLATION OF FUSED HDPE PIPE SHALL COMPLY WITH MANUFACTURER REQUIREMENTS/RECOMMENDATIONS.
  44. SERVICE SADDLE FOR HDPE PIPE SHALL BE IPEX/FRIATEC MODEL "VA"

## C900 RJB™ (CERTA LOK) PIPE:

JOINED TOGETHER USING A NON-METALLIC MECHANICALLY RESTRAINED BELL AND SPIGOT SYSTEM. HIGHESTRENGTH, FLEXIBLE THERMOPLASTIC SPLINES ARE INSERTED INTO MATING, PRECISION MACHINED GROOVES IN THE SPIGOT AND BELL ENDS OF THE PIPE DURING ASSEMBLY TO PROVIDE FULL 360° RESTRAINT WITH EVENLY DISTRIBUTED LOADING. THE PRODUCTS REPRESENTED BY THIS SPECIFICATION ARE MADE FROM UN-PLASTICIZED PVC COMPOUNDS HAVING A MINIMUM CELL CLASSIFICATION OF 12454 AS DEFINED IN ASTM D 1784. THE COMPOUND QUALIFIES FOR A HYDROSTATIC DESIGN BASIS (HDB) OF 4000 PSI FOR WATER AT 73.4°F IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM D 2837. PIPE AND LOCKING SPLINES ARE COMPLETELY NON-METALLIC. JOINTS MEET THE ZERO LEAKAGE TEST REQUIREMENTS OF ASTM D 3139.

THE PRODUCTS REPRESENTED BY THIS SPECIFICATION ARE MANUFACTURED FROM PIPE CONFORMING TO AWWA C900 (DEPENDING ON SIZE). THE RESTRAINED JOINT PIPE SYSTEM MEETS ALL SHORT AND LONG TERM PRESSURE TEST REQUIREMENTS OF AWWA C900. THE PRODUCTS REPRESENTED BY THIS SPECIFICATION ADDITIONALLY CONFORM TO THE FOLLOWING: NSF 61 DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS. PIPE SHALL BE HOMOGENEOUS THROUGHOUT AND FREE FROM VOIDS, CRACKS, INCLUSIONS AND OTHER DEFECTS AND SHALL BE AS UNIFORM AS COMMERCIAL PRACTICABLE IN COLOR, DENSITY AND OTHER PHYSICAL CHARACTERISTICS. PIPE JOINTS ARE LEGIBLY AND PERMANENTLY MARKED IN INK WITH CRITICAL INFORMATION INCLUDING NOMINAL SIZE, MATERIAL TYPE, DIMENSION RATIO, PRESSURE CLASS, APPLICABLE STANDARDS, MANUFACTURER'S NAME OR TRADEMARK, PRODUCTION RECORD CODE, SEAL (MARK) OF TESTING AGENCY VERIFYING THE SUITABILITY OF THE PIPE MATERIAL FOR POTABLE WATER SERVICE.

USERS ARE ENCOURAGED TO REFER TO AWWA C605 "UNDERGROUND INSTALLATION OF POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS WATER" FOR ALL THE PROCEDURAL REQUIREMENTS INCLUDING BUT NOT LIMITED TO PROPER HANDLING AND STORAGE, INSTALLATION, TAPPING AND TESTING. C900 RJB™ PVC RESTRAINED JOINT PIPE PRODUCED BY CERTAINEED CORPORATION OR ITS APPROVED MANUFACTURER. NOMINAL OUTSIDE DIAMETERS AND WALL THICKNESSES OF THIS RESTRAINED JOINT PIPE CONFORM TO THE REQUIREMENTS OF AWWA C900-07. PIPE IS FURNISHED IN STANDARD LAYING LENGTHS OF 20 FEET. STANDARD COLOR IS BLUE (ALSO AVAILABLE IN WHITE, GREEN AND PURPLE).

## FRAC-OUT NOTES

### I. Introduction

Horizontal Directional Drilling (HDD) is a construction method used to install pipelines through sensitive areas, such as stream crossings and wetlands. However, HDD may have indirect effects through the release of drilling fluids.

### II. General HDD Operating Procedures and Project Specific Measures

The typical horizontal directional drill consists of three main steps: drilling a pilot hole, back reaming and pulling of the pipe into the hole. The pilot hole involves drilling the entire length of the bore with a small diameter drill head. Once the drill path has been established a reamer is placed on the drill head and then is pulled back through the bore hole to widen the hole. Finally the pipe is attached to the drill head and pulled back through the bore hole.

### III. Drilling Fluids

Typically the drilling fluid is composed of water and clay particulates. The clay particulates consist of Bentonite. The main component of Bentonite is montmorillonite clay. This clay has a high shrink-swell capacity. Bentonite attracts water and bonds to it and therefore is capable of absorbing up to seven times its weight in water and swelling up to eighteen times its dry volume. The Bentonite and water work together to lubricate and cool the drill head, seal and fill pore spaces surrounding the hole, prevent the drill hole from collapsing, and suspends the cuttings of the native soil and removes them.

In some cases other materials are added to the bentonite water mixture to aid in the drilling process. A copy of the Material Data Safety Sheets (MSDS) for these materials is kept on site.

During the HDD process, it is possible for drilling fluids to reach the surface by following a vertical fracture. This is commonly referred to as a frac out.

### IV. Potential Impacts to Biological Resources

The release of drilling fluids from frac outs may surface in upland, wetland or aquatic areas. Frac outs in upland areas are typically easy to contain and therefore have only minor effects on the surrounding environment. When a frac out is observed in a wetland, of any kind, directional boring will stop immediately and the bore stem will be pulled back to relieve the pressure on the frac out. Frac outs in wetlands with no standing water

will be contained using silt fence, eel logs and/or coconut rolls. A vacuum truck will be in the immediate vicinity to begin removing the bentonite material. In inundated wetland areas with two to three feet of standing water a containment box will be used to contain the frac out material. Contractor will have containment boxes and/or silt fence available for use. In the event that a containment box is used, sand bags or eel logs can be utilized if needed to prevent any material from seeping under the containment box. A vacuum truck will be in the immediate vicinity to begin removing the bentonite material from the containment box. Once the frac out has been contained drilling operations may continue.

Frac outs that occur in aquatic environments, such as streams, are more difficult to contain. The bentonite will readily disperse in the flowing water. In an effort to minimize the chance of a frac out the drill will be a minimum of 5 feet below the bottom of the ditch bed. When a frac out is observed in the ditch all drilling operations will cease and the bore stem will be pulled back to relieve pressure. The location of the frac out will be identified and if possible a containment box will be used to contain the frac out. If not, it will be evaluated if the drill pressure can be reduced or can be halted overnight to allow the area of the fracture to seal up. When boring continues the sight will be closely monitored. A vacuum truck will be on site and ready to vacuum up the drilling fluids if possible.

### V. On-Site Monitoring

During drilling operations, visual inspections along the bore path of the alignment shall take place at all times.

### VI. Field Response Plan

The HDD operator shall closely monitor drilling pressures. A complete and sudden loss of returns will be a signal to watch closely for possible surface frac outs. This plan uses the loss of returns or pressure and visual indications to trigger response and mitigation plans. In the event of a sudden loss in returns or a surface release, the HDD operator will cease operations to determine what actions need to be taken. In the case of an impact to the ditches or any wetland areas, Lake County utility inspector/supervisor must be contacted immediately. The Lake County Public Works (LCPW) and Greengard, Inc. should be notified immediately in the event of a frac out. An LCPW inspector will be sent to the site to document the frac out and direct any additional clean up response. LCPW will immediately notify the Illinois Environmental Protection Agency and Lake County Stormwater Management Commission of the frac out and the clean up response.


All equipment required to contain and clean up a frac out will be available at the work site. This equipment may include the following:

- Silt fence and/or containment box;
- Coconut rolls/eel logs;
- One vacuum trucks;

Prior to any expected rain event, the following steps will be taken to contain any sediment within the project site. All soil piles and exposed soil areas will be covered with plastic sheeting and surrounded by silt fence, as necessary. All open catch basins will be inspected to ensure they are properly protected with fabric and/or plastic sheeting. All silt fence and coconut rolls/eel logs will be inspected and repairs and/or additions will be made as necessary.

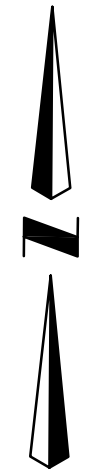
### VII. Documentation

- Record the following information in the Log Book:
  - Frac out start and stop times.
  - Frac out location
  - The volume/size of the frac out.
  - The materials used in the drilling mud.
  - The per cent of materials used in the drilling mud (ie 1000 gal water to 50 lb of bentonite).
- If possible, take photos to document the clean up procedure

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## SPECIFICATIONS

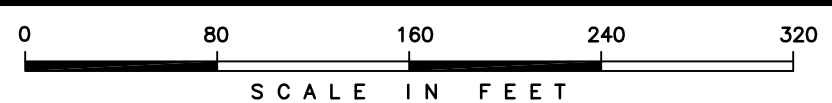
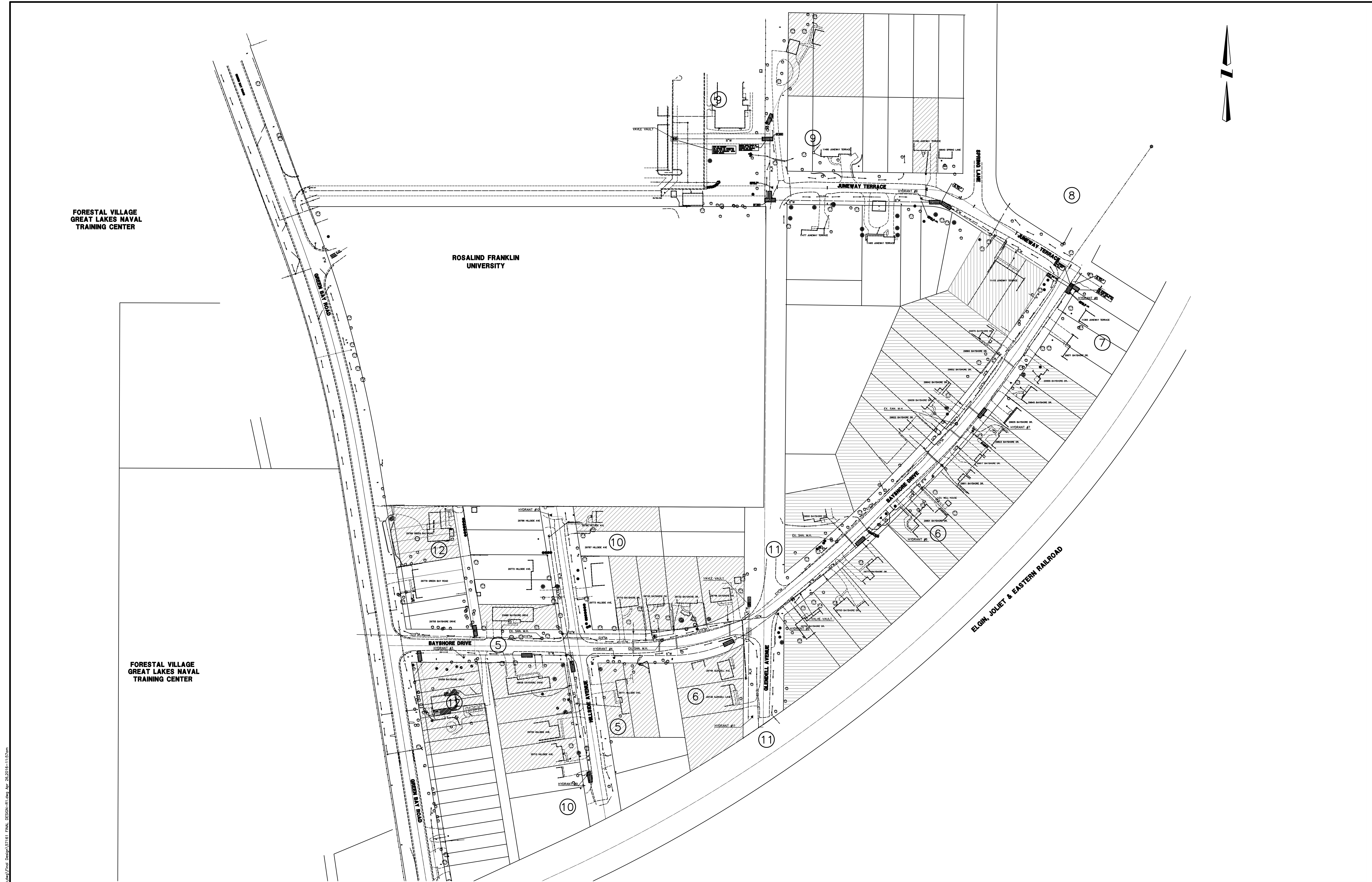




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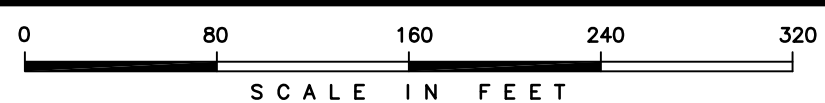
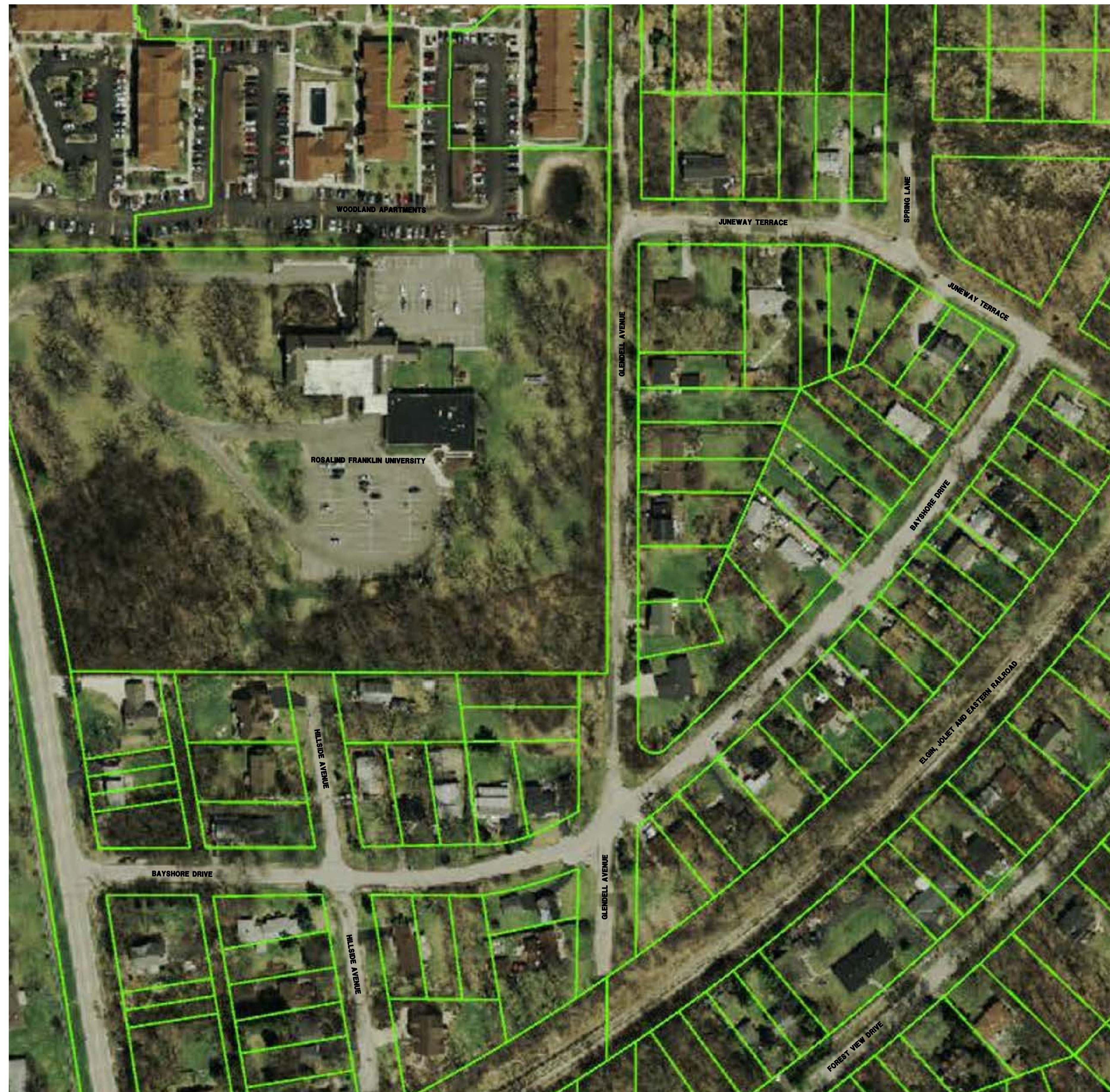
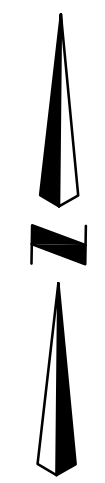
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LCPWD - ARDEN SHORES ESTATES - WATERMAIN  
GENERAL LAYOUT

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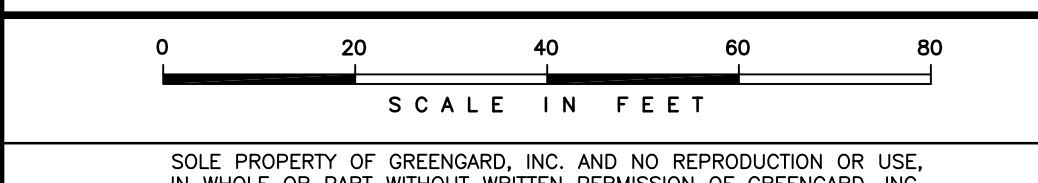
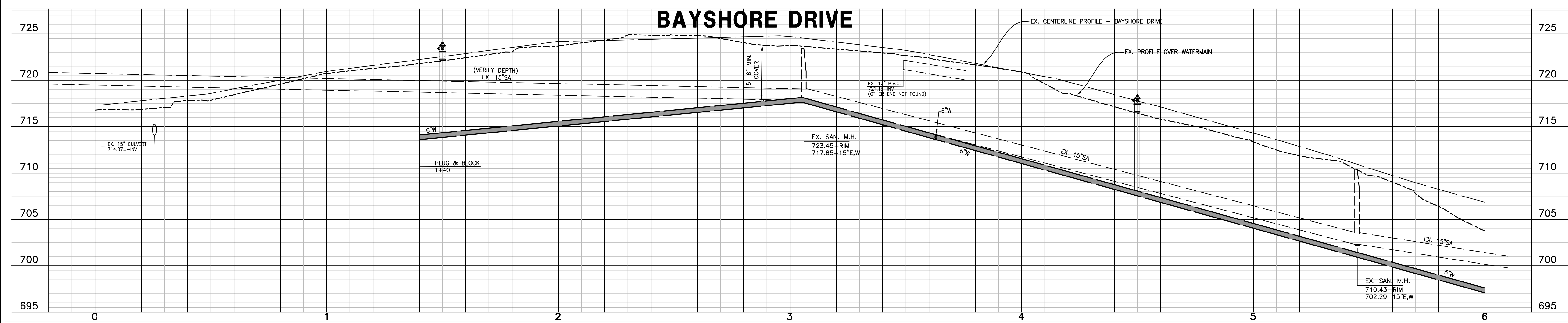
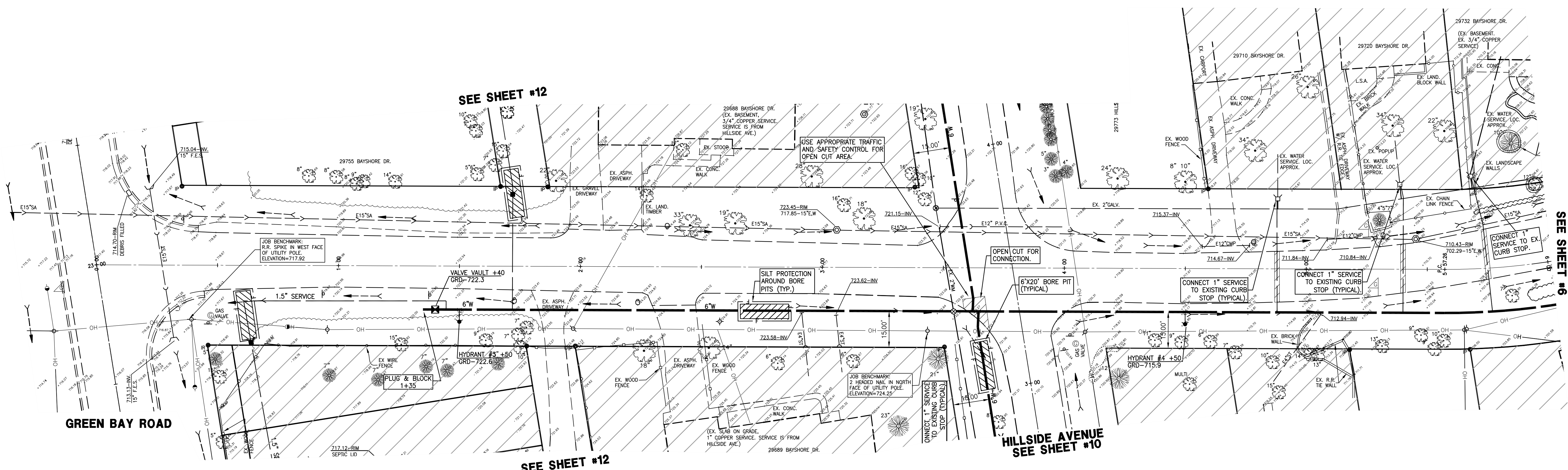
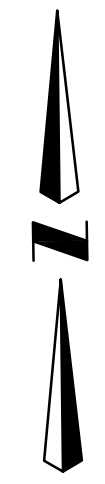
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SHEET 4 of 14

LCPWD - ARDEN SHORES ESTATES - WATERMAIN

AERIAL

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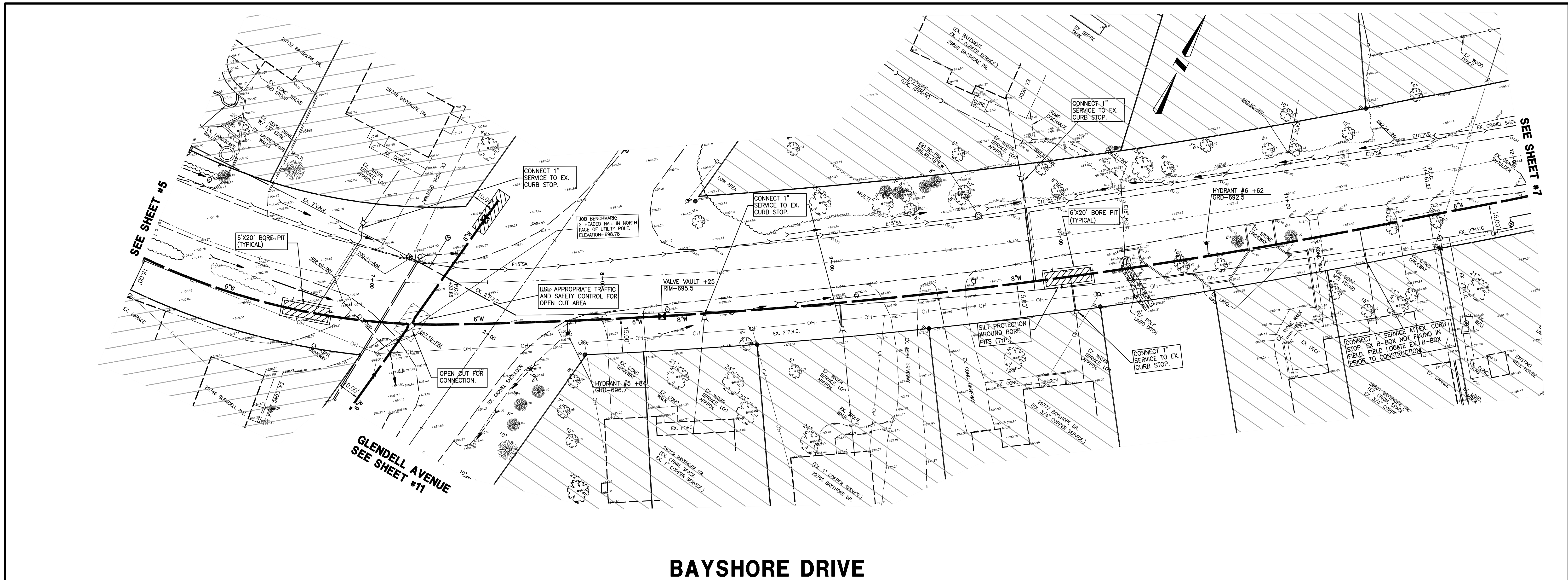
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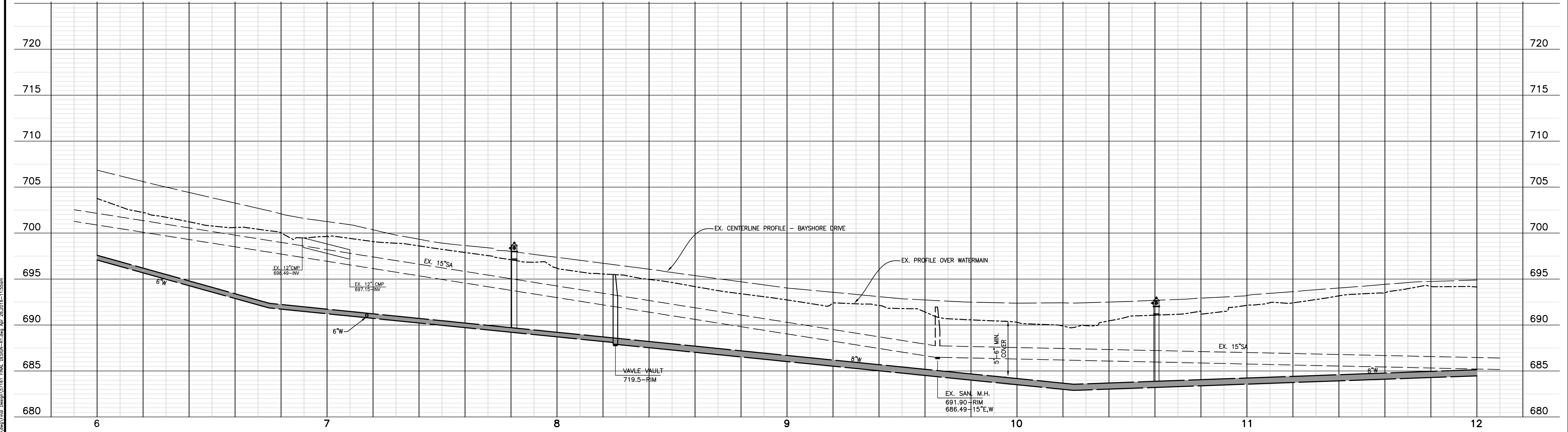
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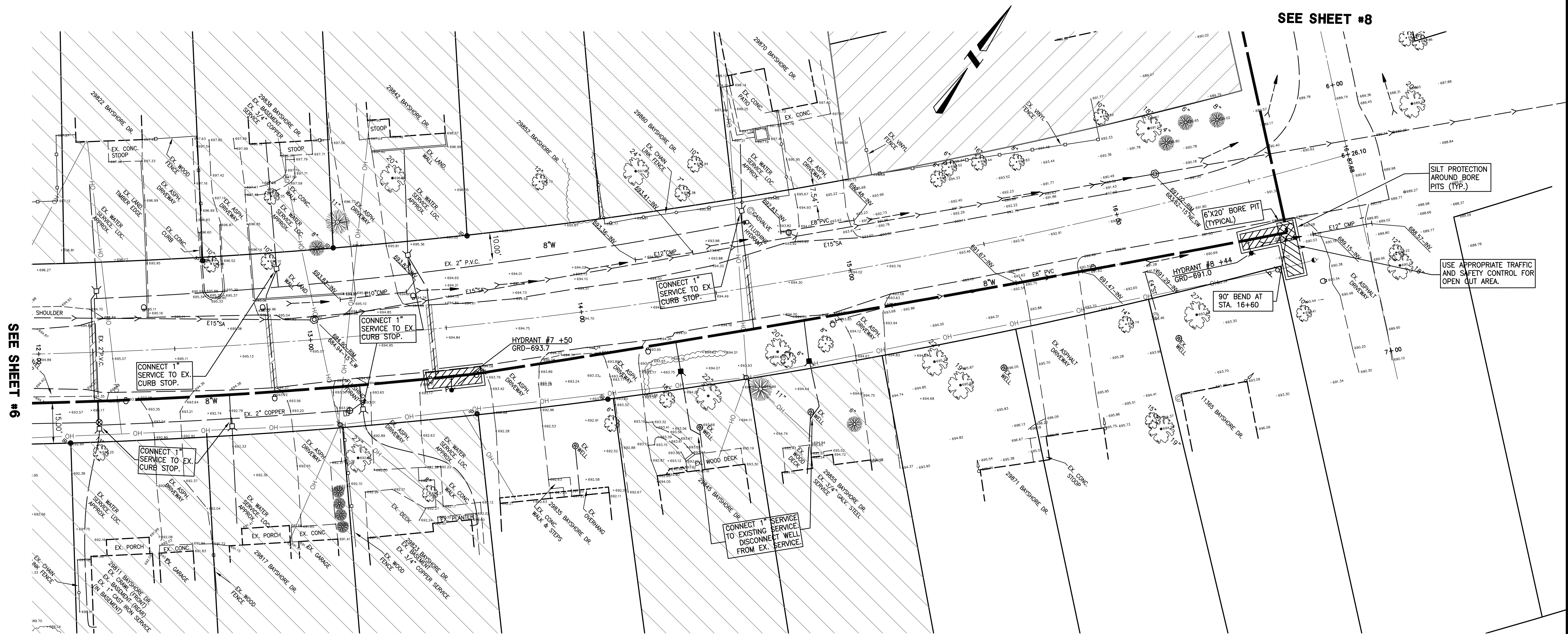


### BAYSHORE DRIVE



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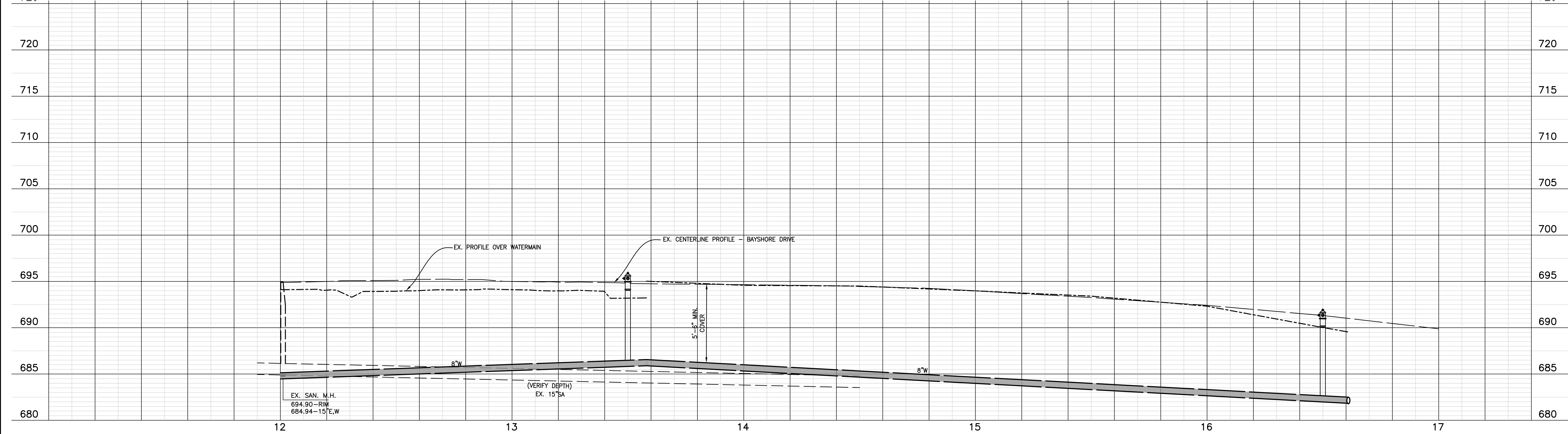




SEE SHEET #8

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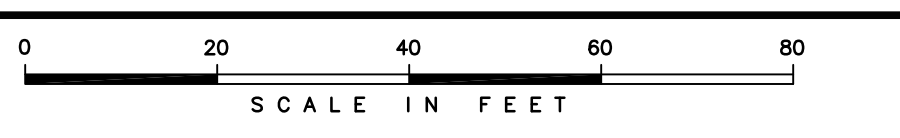
**BAYSHORE DRIVE**



EX. SAN. M.H.  
694.90-RIM  
684.94-15'E,W

(VERIFY DEPTH)  
EX. 15"SA

5'-0" MIN. COVER



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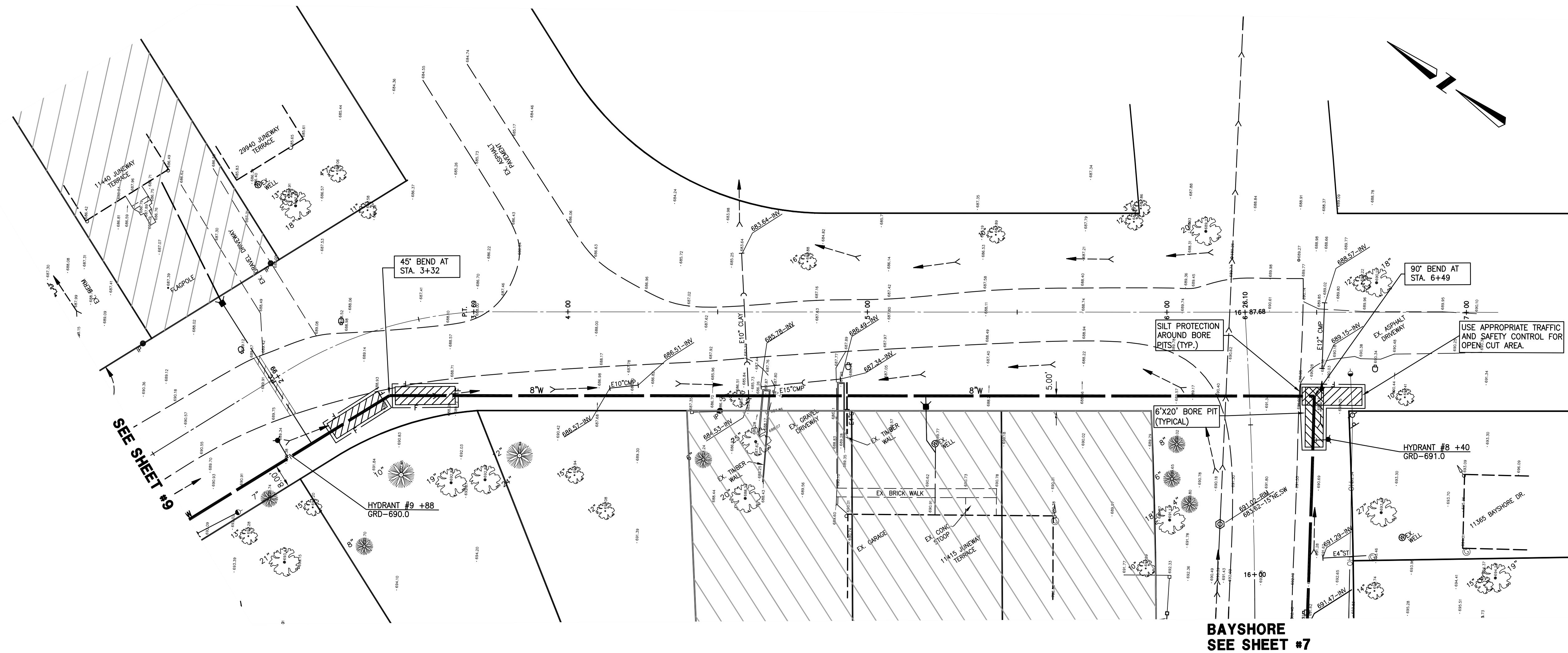
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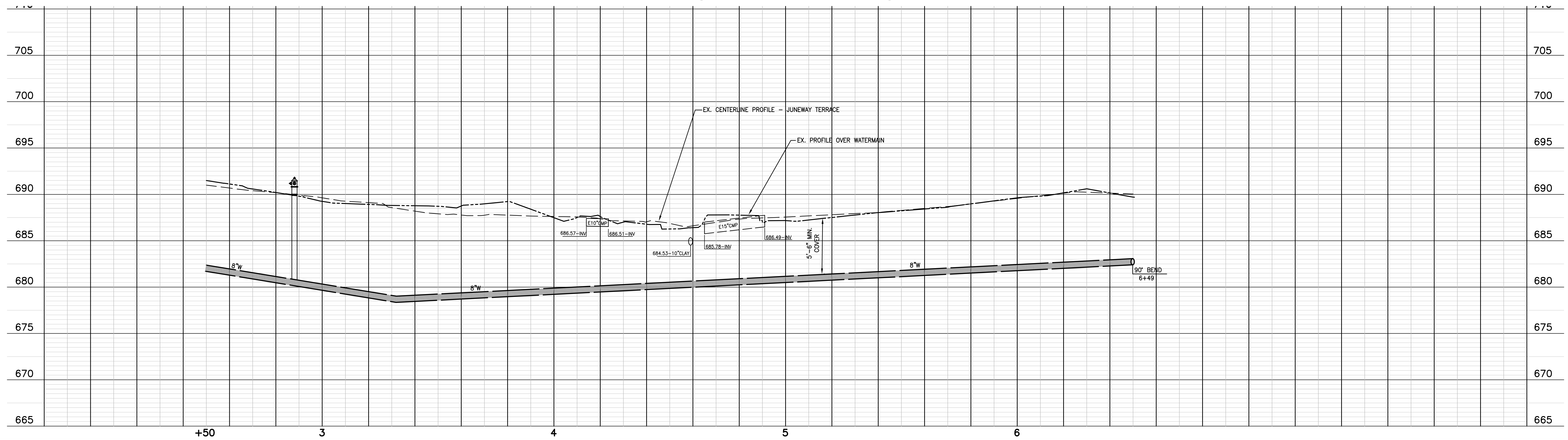
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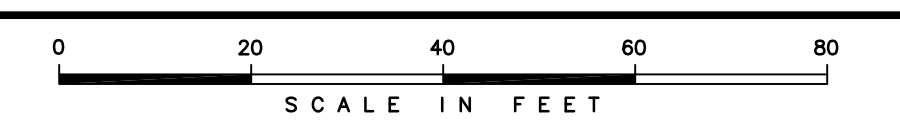




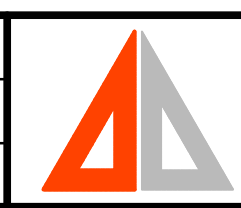
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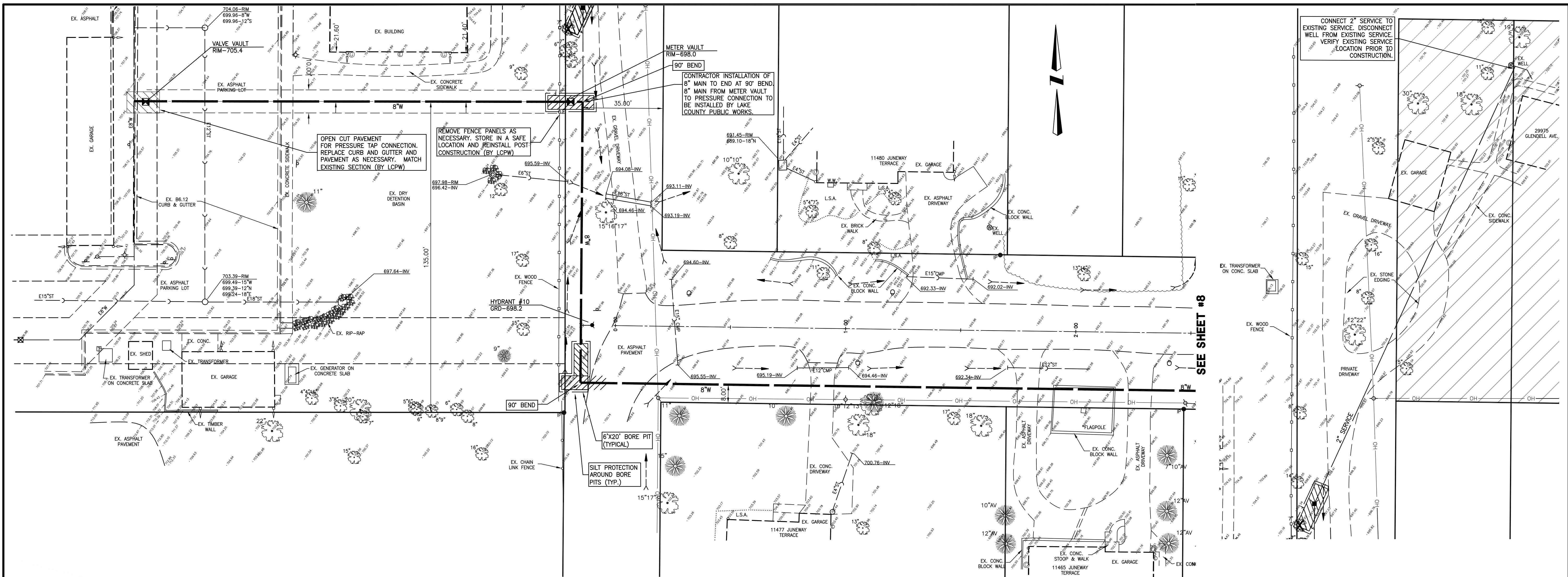


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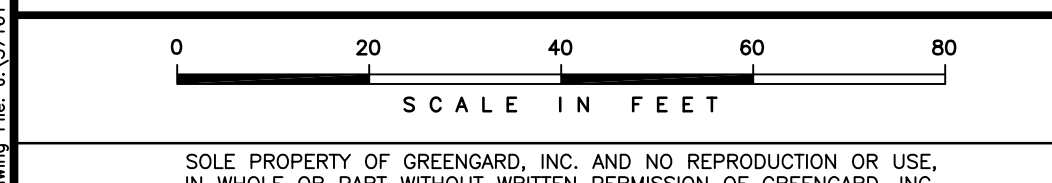
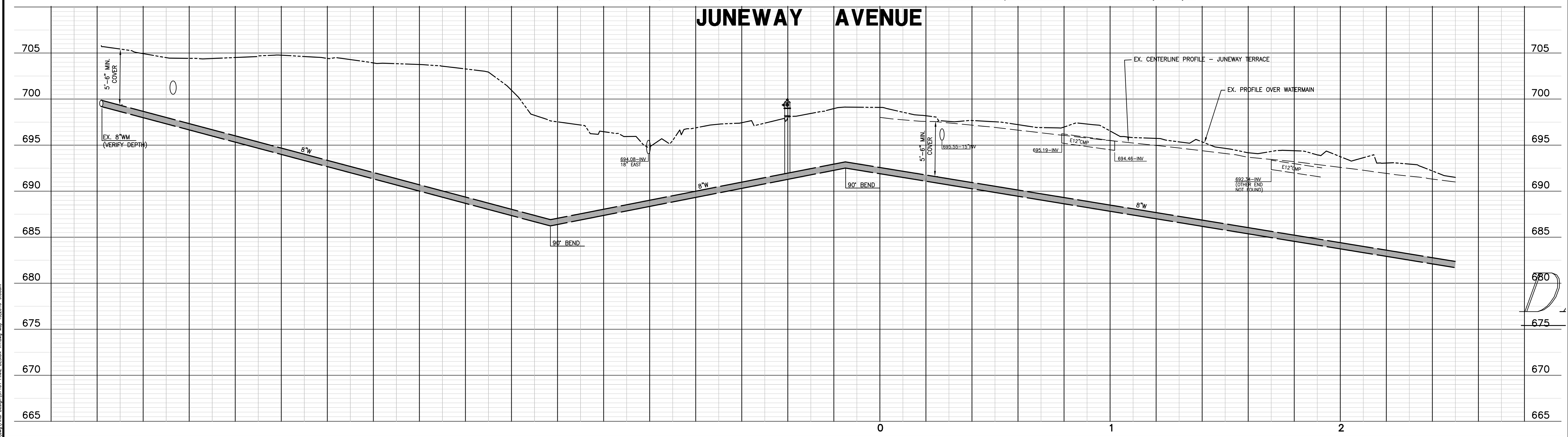
LCPWD - ARDEN SHORES ESTATES - WATERMAIN  
**PLAN & PROFILE**





SEE SHEET #8

### JUNEWAY AVENUE



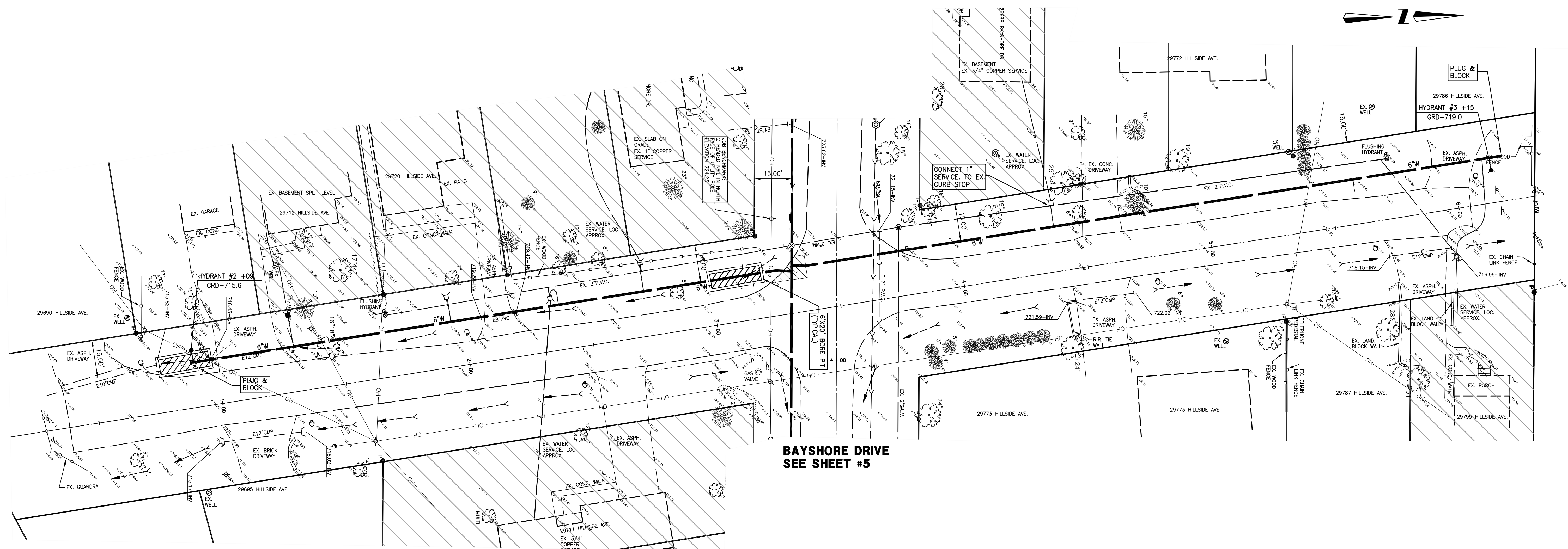
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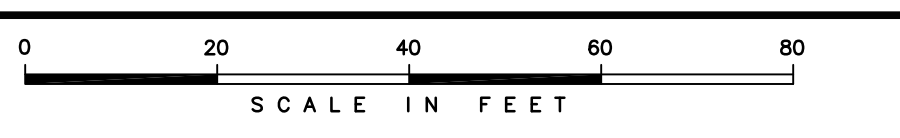
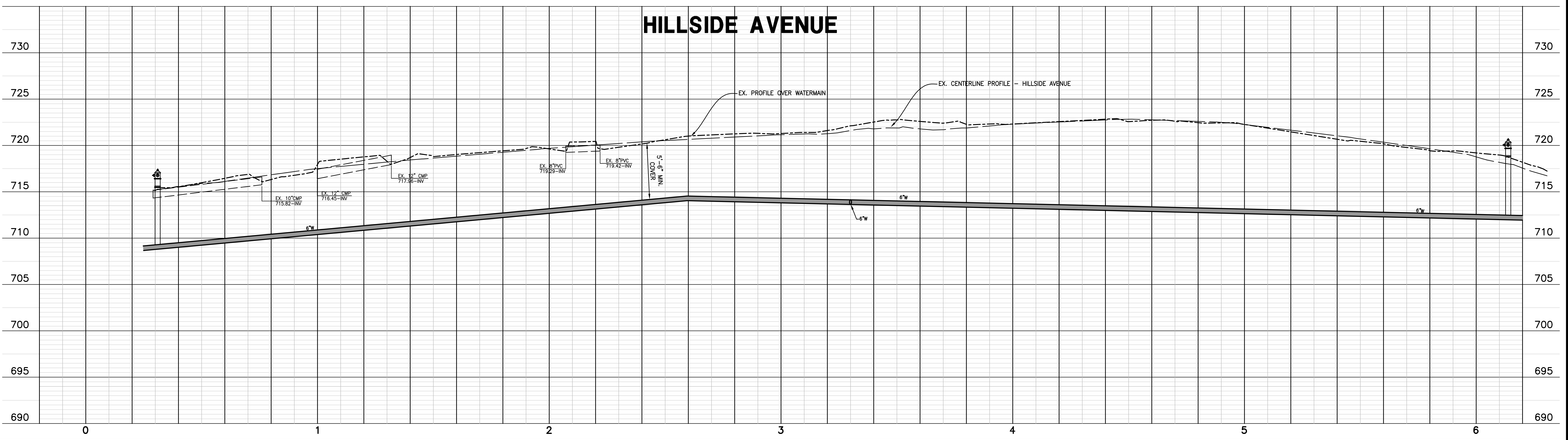
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BAYSHORE DRIVE  
SEE SHEET #5

### HILLSIDE AVENUE



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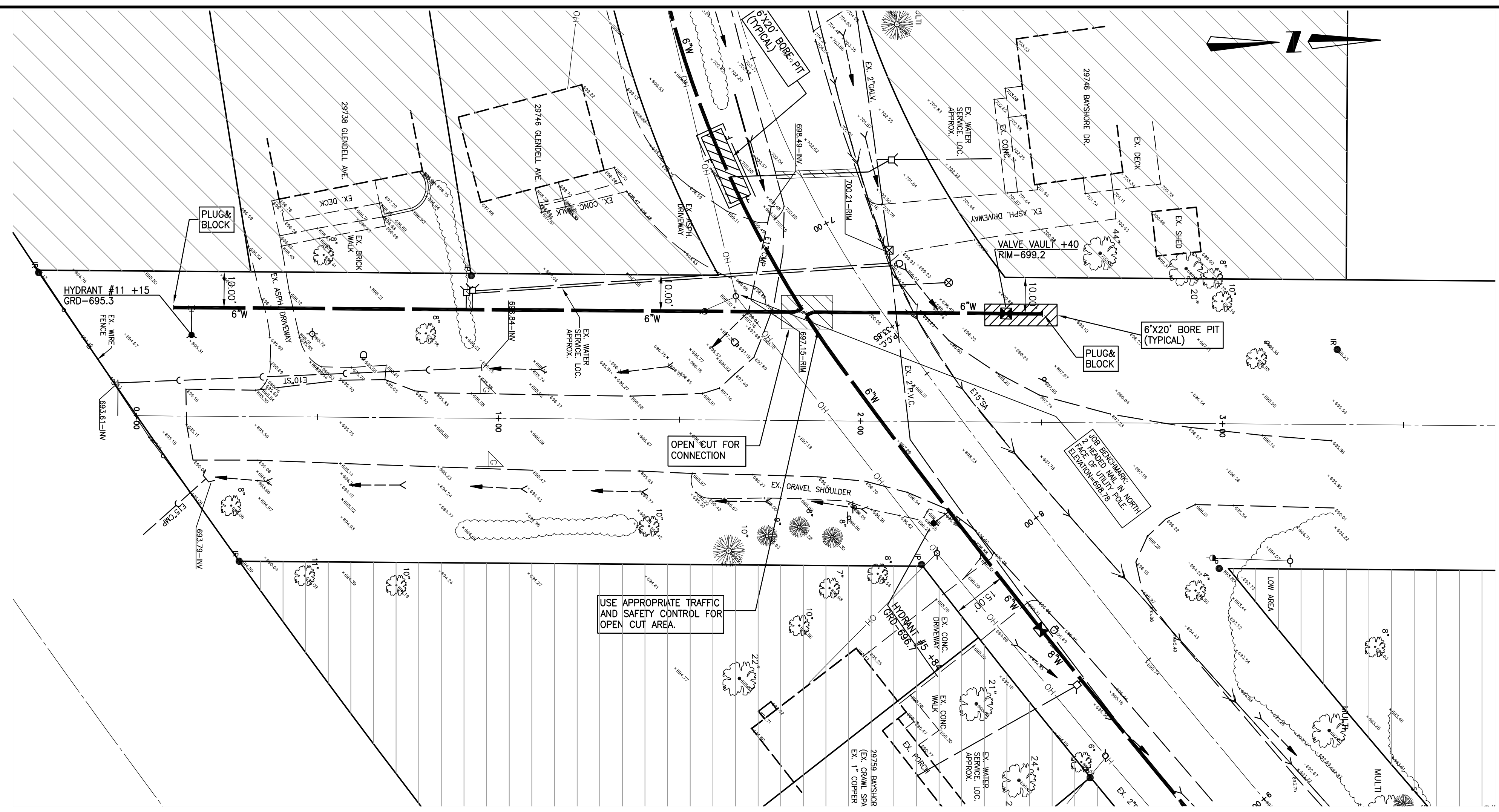
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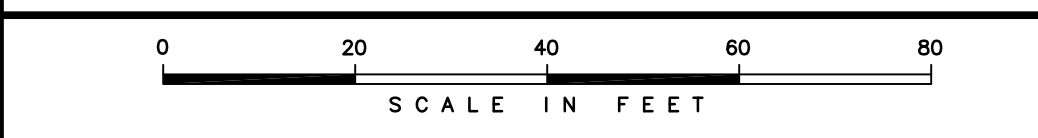
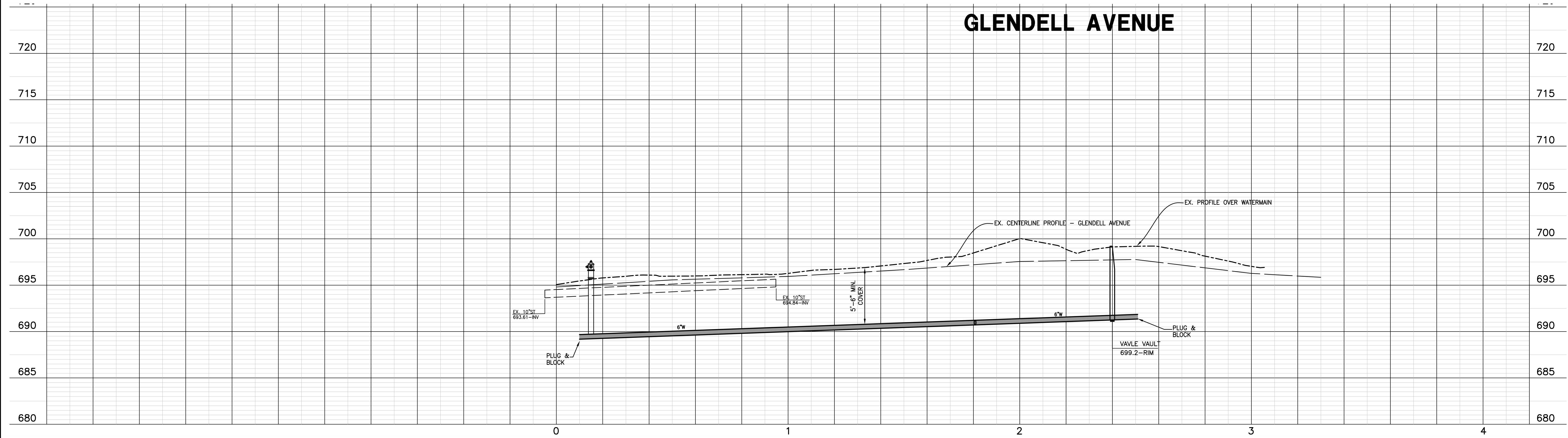
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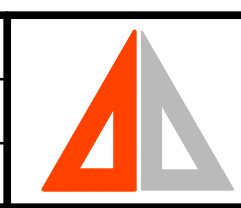


BAYSHORE DRIVE  
SEE SHEET #6

### GLENDELL AVENUE



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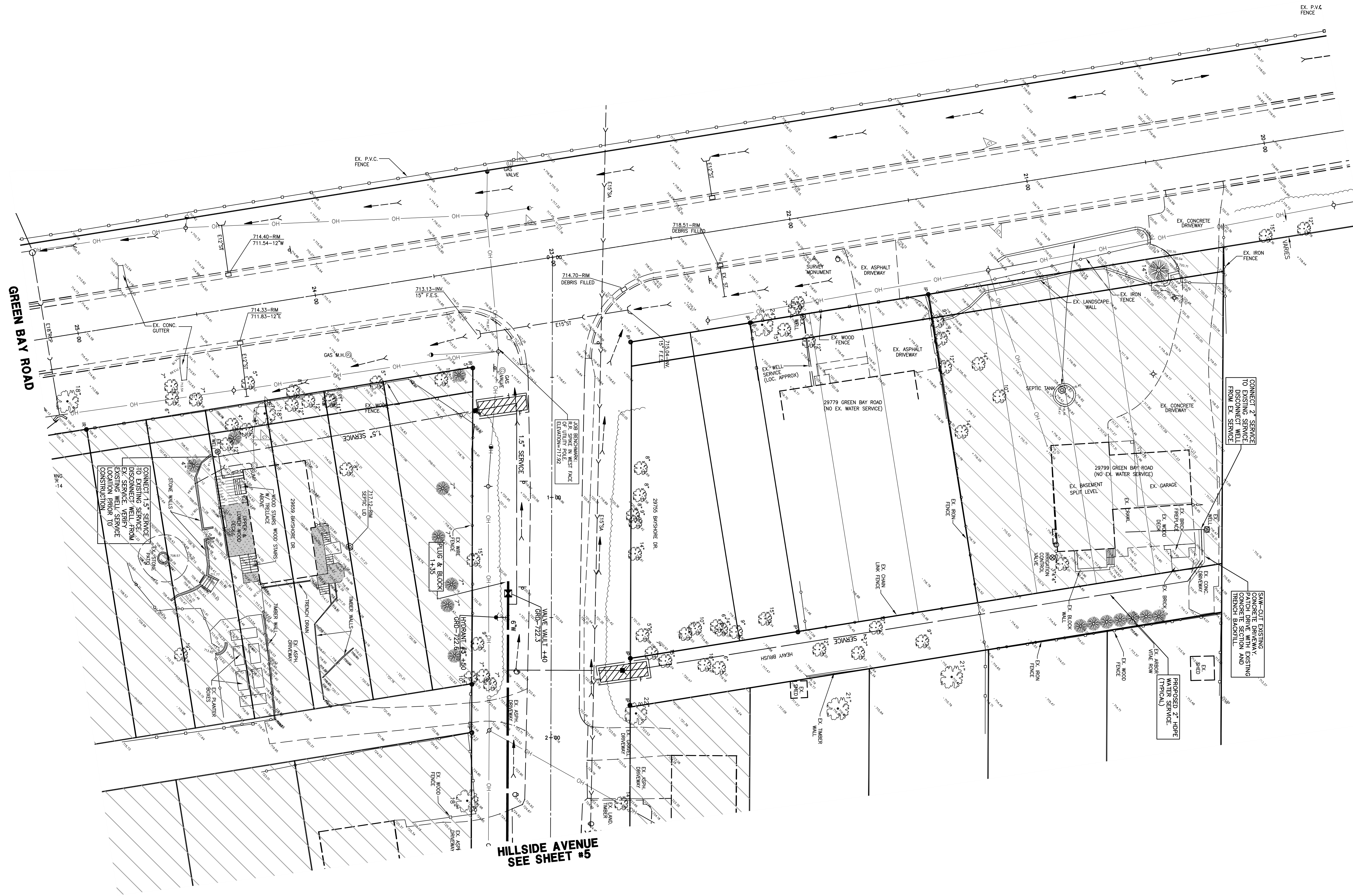
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SHEET 11 of 14

LCPWD - ARDEN SHORES ESTATES - WATERMAIN  
**PLAN & PROFILE**

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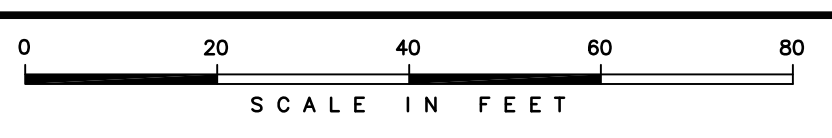
CONNECT 2\"/>

CONNECT 2\"/>

REMOVE EXISTING CONCRETE DRIVEWAY PATCH DRIVE WITH EXISTING TRENCH BACKFILL

PROPOSED 2\"/>

HILLSIDE AVENUE  
SEE SHEET #5



SCALE IN FEET

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SHEET	12 OF 14

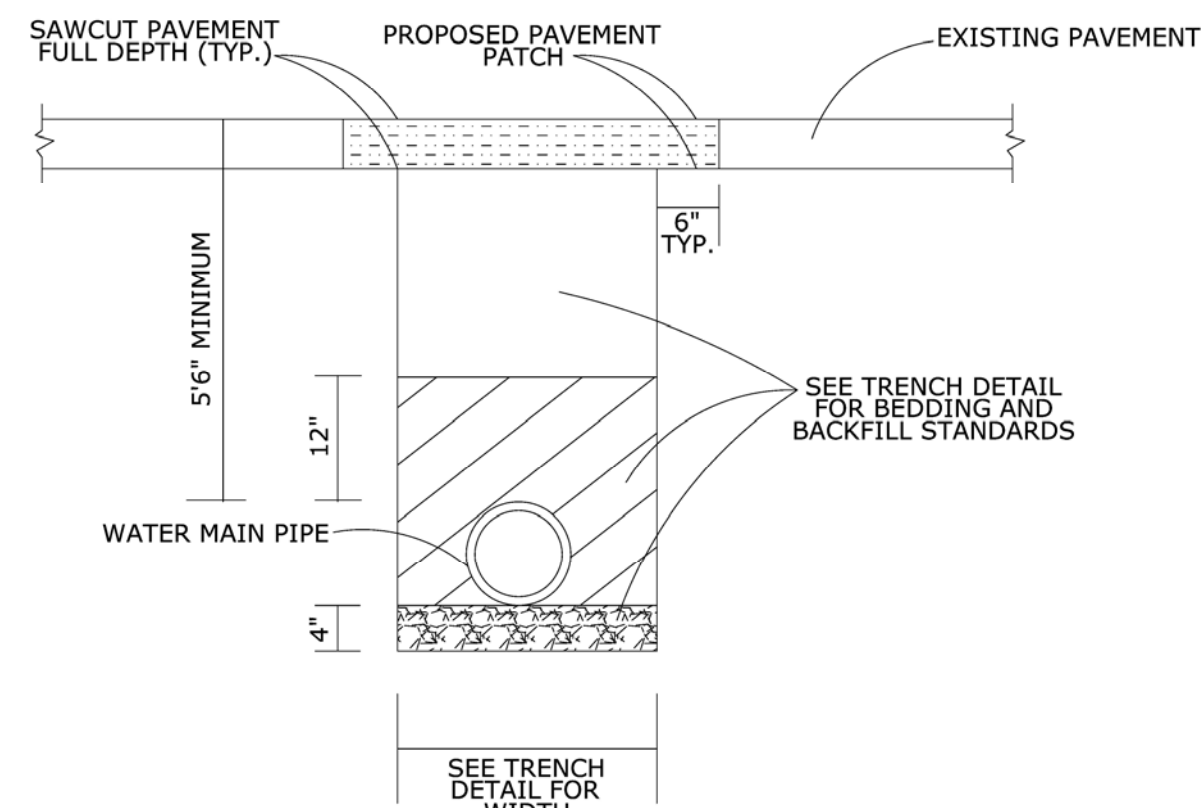
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**WATERMAIN PLAN**

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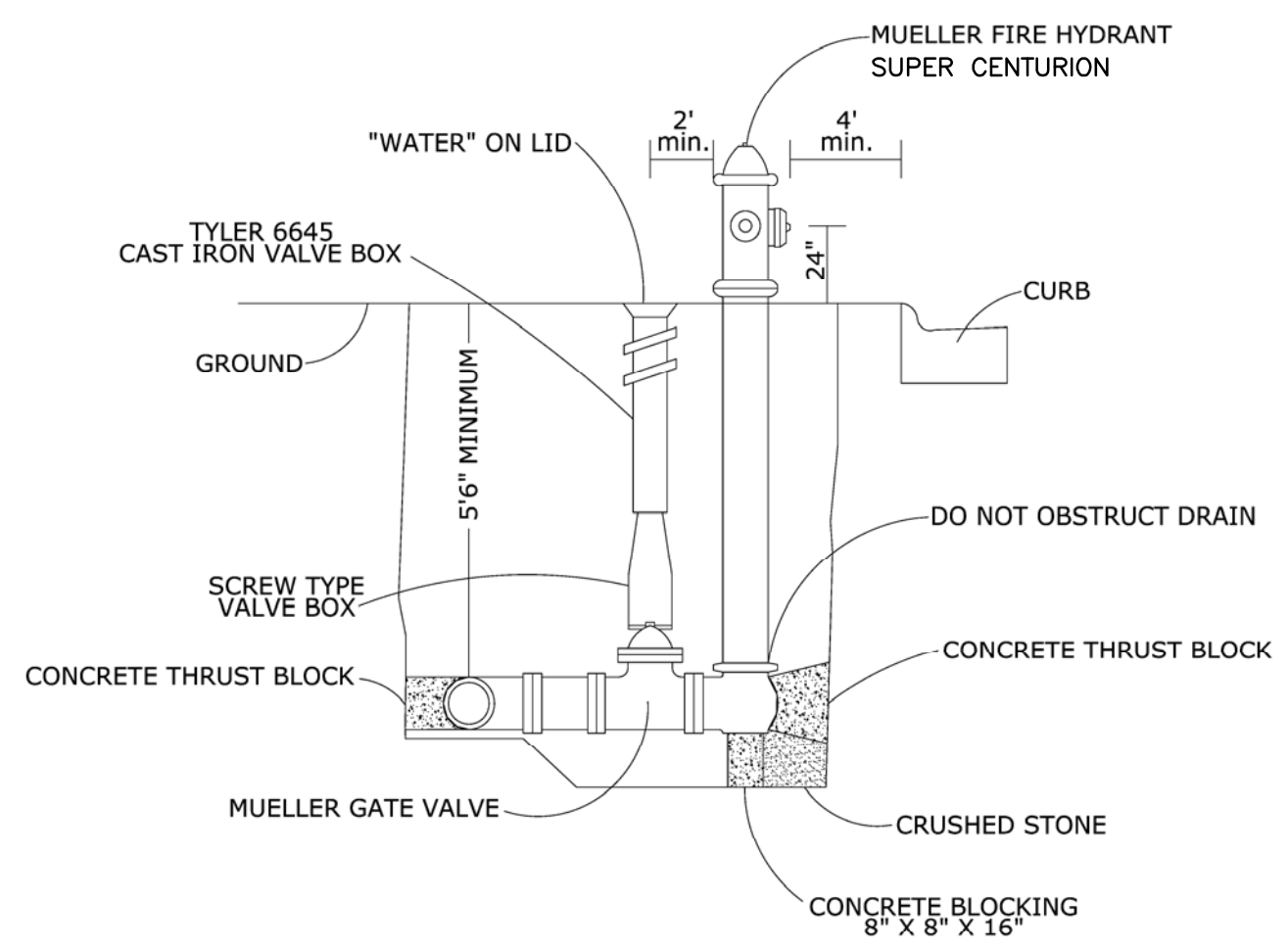


- NOTES :
1. WATERMAIN SHALL BE INSTALLED AT A MINIMUM DEPTH OF 5'6" TO THE TOP OF PIPE.
  2. WATER MAIN SHALL BE A MINIMUM OF 8" DIAMETER.
  3. WATER MAINS SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) CONFORMING TO ANSI A21.51 (AWWA C151).
  4. ALL PIPE JOINTS SHALL BE "PUSH-ON" TYPE JOINTS CONFORMING TO ANSI A21.10 (AWWA C110).
  5. GATE VALVES MUST BE INSTALLED AT EACH BRANCH MAIN CONNECTION AND ELSEWHERE, AS REQUIRED, TO ALLOW ADEQUATE ISOLATION OF INDIVIDUAL SECTIONS FOR MAINTENANCE.
  6. ALL TESTING SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 41-2.12 OF THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
  7. ANY EXISTING PAVEMENT DISTURBED BY A WATER MAIN INSTALLATION SHALL BE SAWCUT FULL DEPTH AND BE REPLACED WITH 2" SURFACE COURSE AND 2" BINDER COURSE.
  8. PLAN AND PROFILE VIEWS SHALL BE PROVIDED FOR ALL WATER MAINS.
  9. FIRE HYDRANTS SHALL BE PLACED AT A MAXIMUM OF 300 FEET APART.
  10. 90 DEGREE BENDS ARE NOT ALLOWED.
  11. THE CONTRACTOR SHALL NOTIFY THE WATER SUPERINTENDENT 48 HOURS PRIOR TO INSTALLATION.
  12. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
  13. ALL WATERMAIN PIPE SHALL BE INSTALLED WITH A CONTINUOUS LOCATOR WIRE; 3/16" BARE CABLE DIAMETER, 7X19 STRAND CORE TYPE 304 STAINLESS STEEL WIRE ROPE, NYLON COATED ALONG THE PIPELINE.

**WATER MAIN CONSTRUCTION WM-1**



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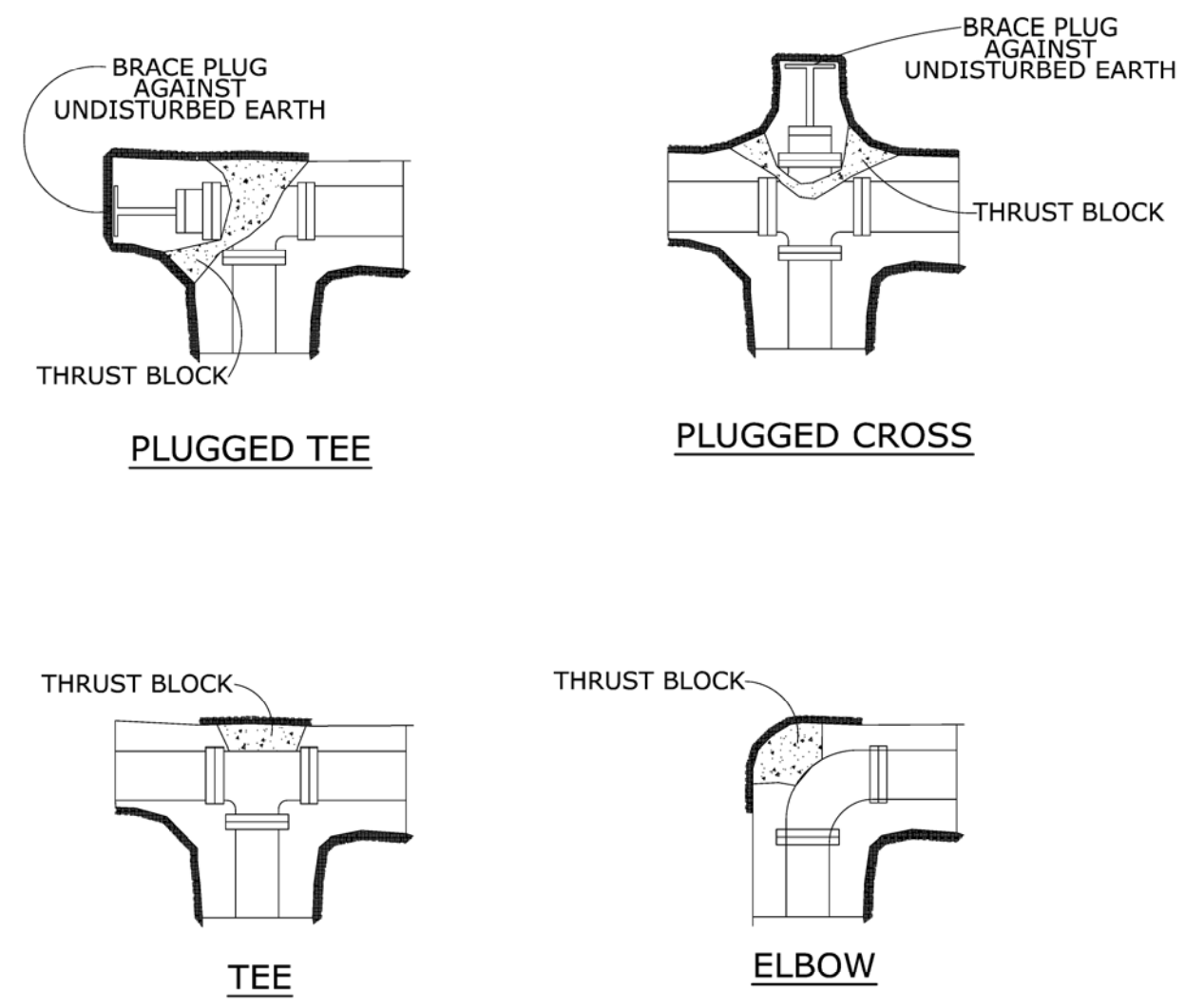


- NOTES :
1. FIRE SERVICE TO PRIVATE PROPERTIES SHALL BE SEPARATE FROM DOMESTIC SERVICE. EACH SERVICE MUST BE METERED SEPARATELY. SEE STANDARDS WM-4 OR WM-8.
  2. SPACING OF FIRE HYDRANTS SHALL NOT EXCEED 300 LINEAL FEET.
  3. THE CONTRACTOR SHALL NOTIFY THE WATER SUPERINTENDENT 48 HOURS PRIOR TO INSTALLATION.
  4. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
  5. STEAMER PORT SHALL FACE PAVEMENT.
  6. HYDRANT SHALL BE PAINTED FIRE RED.

**FIRE HYDRANT WM-2**



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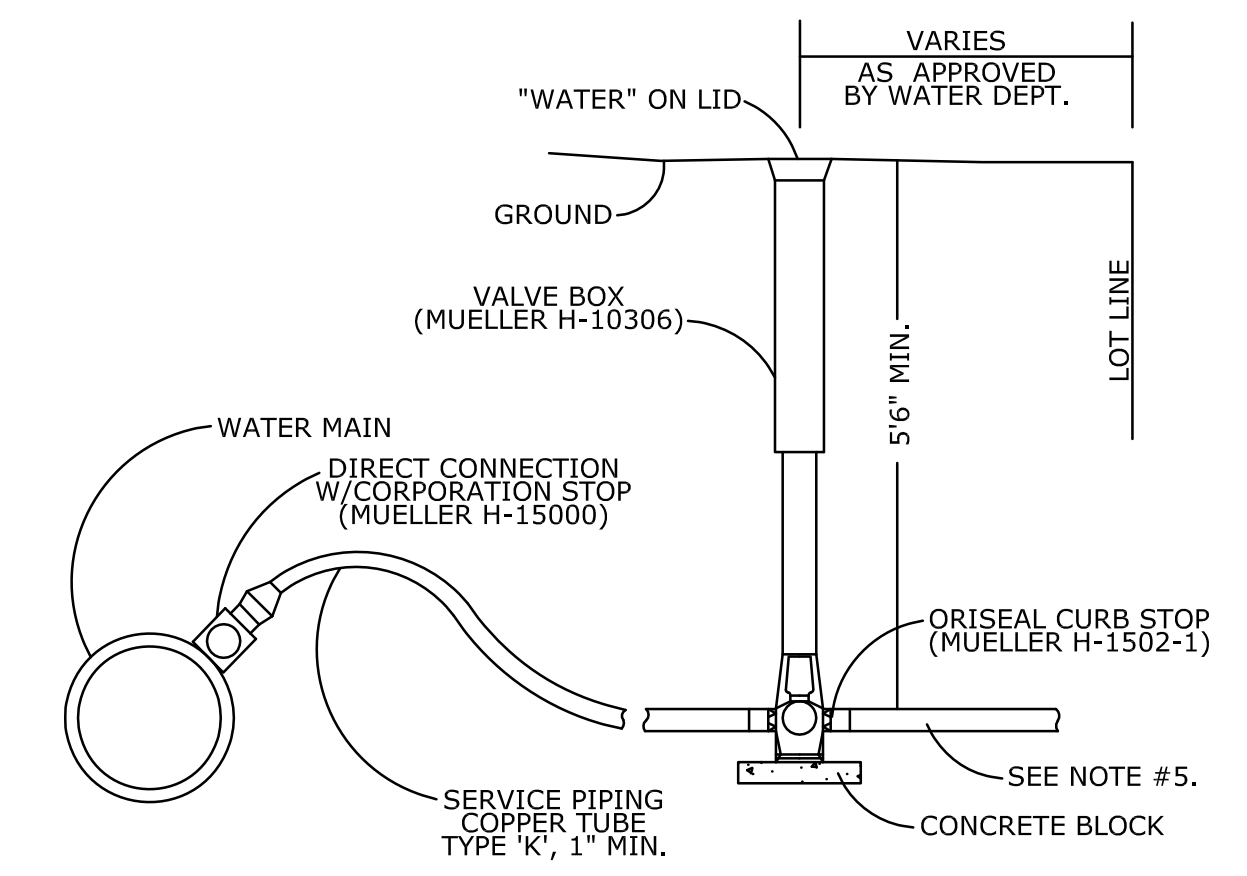


- NOTES :
1. THRUST BLOCKS REQUIRED AT ALL BENDS REQUIRING FITTINGS.
  2. ALL BLOCKS TO BE 3,000 PSI CONCRETE. JOINTS SHALL BE KEPT CLEAR OF CONCRETE BLOCKING.
  3. THE CONTRACTOR SHALL NOTIFY THE WATER SUPERINTENDENT 48 HOURS PRIOR TO INSTALLATION.
  4. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.

**THRUST BLOCKING WM-3**



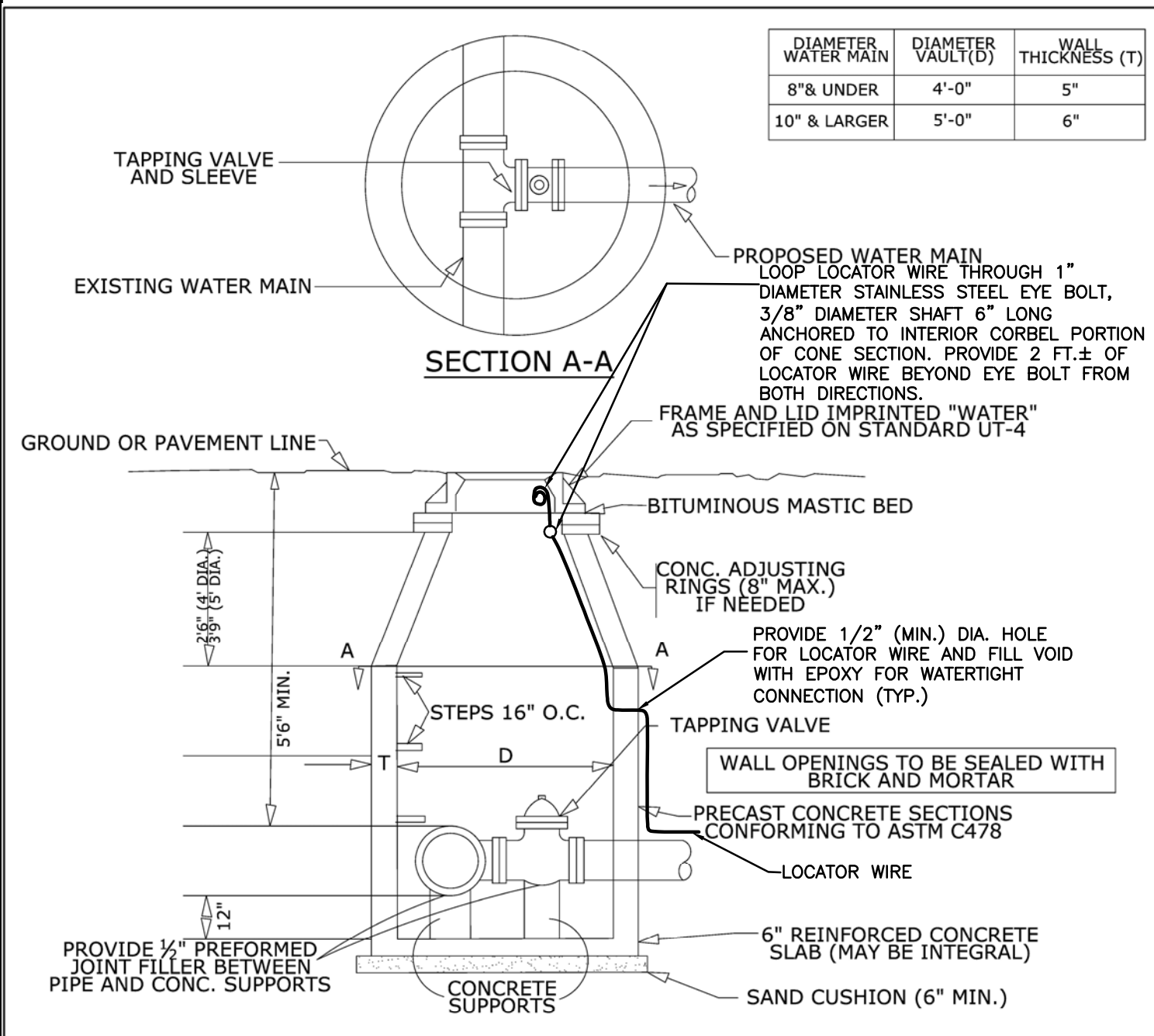
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- NOTES :
1. DOMESTIC SERVICES TO BE SEPARATE FROM FIRE SERVICE AND METERED SEPARATELY.
  2. ALL TAPS SHALL BE COMPLETED BY A QUALIFIED CONTRACTOR, INSPECTED BY THE CITY.
  3. THE CONTRACTOR SHALL NOTIFY THE WATER SUPERINTENDENT 48 HOURS PRIOR TO INSTALLATION.
  4. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
  5. CONNECT 1" BUFFALO BOX TO EXISTING 3/4" TYPE K COPPER SERVICES WITH MUELLER H-15062 STRAIGHT COUPLING FEMALE COPPER FLARE THREAD X COPPER FLARE NUT.

**WATER SERVICE WM-4**

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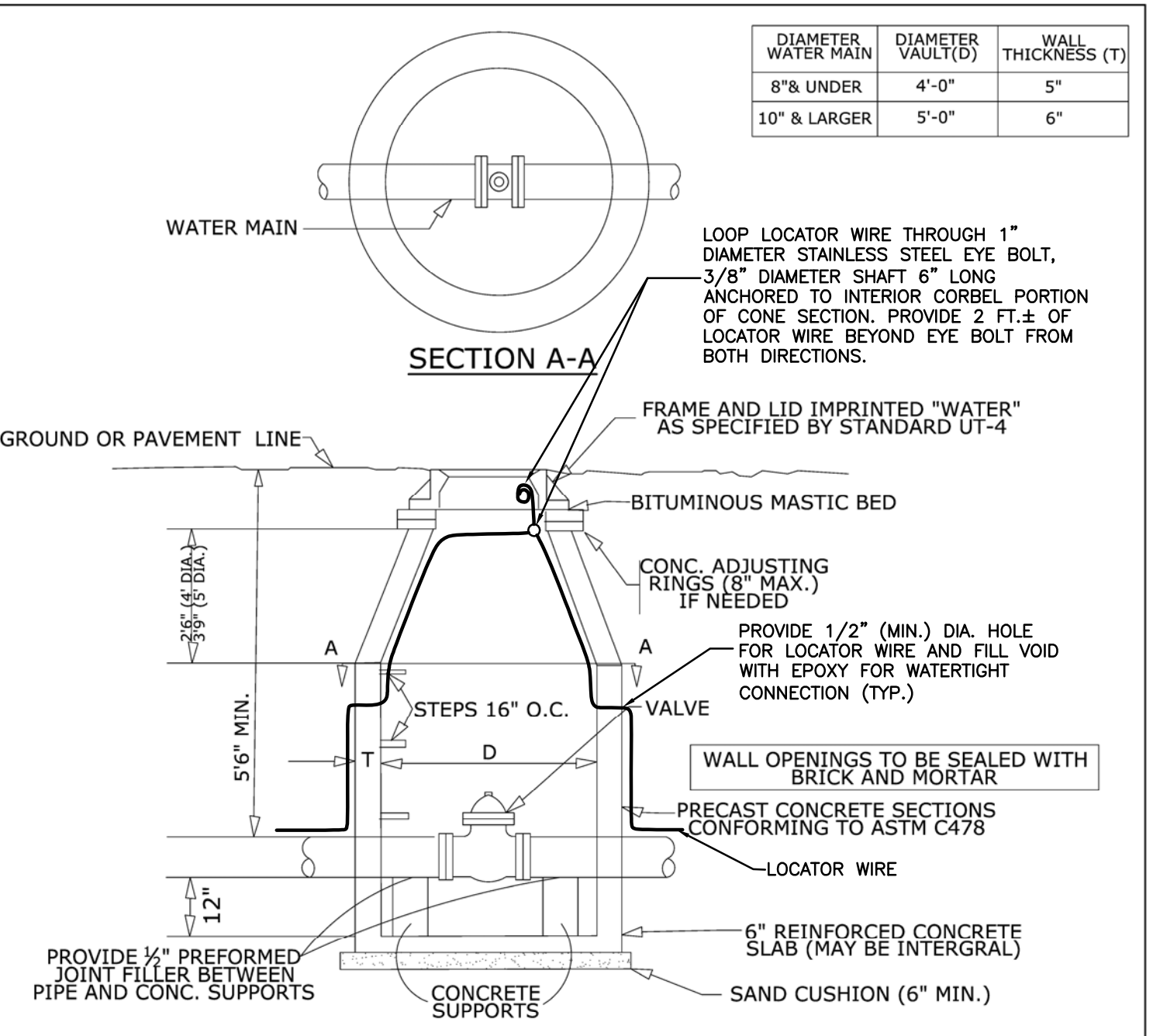


- NOTES :
1. THE CONTRACTOR SHALL NOTIFY THE WATER SUPERINTENDENT 48 HOURS PRIOR TO INSTALLATION.
  2. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
  3. TAPPING SLEEVE SHALL BE SMITH-BLAIR MODEL 663, FULL CIRCUMFERENCE BAND, TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL NUTS AND BOLTS.

**VALVE VAULT AT PRESSURE CONNECTION WM-5**



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- NOTES :
1. THE CONTRACTOR SHALL NOTIFY THE WATER SUPERINTENDENT 48 HOURS PRIOR TO INSTALLATION.
  2. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.

**VALVE VAULT WM-6**



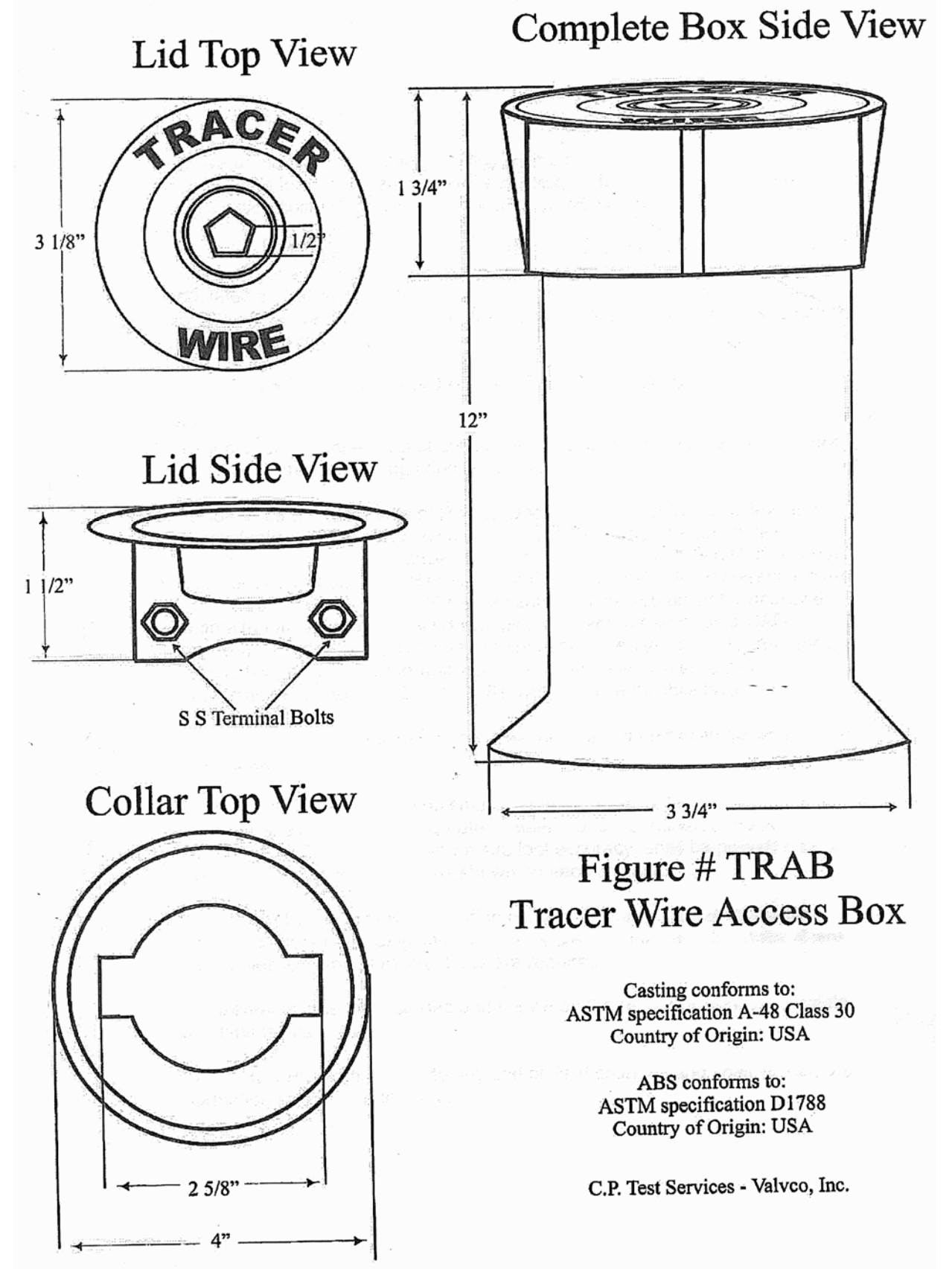
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CONSTRUCTION STANDARD Last Revised 10-22-12

**FRAME AND GRATE/LID SCHEDULE**

STRUCTURE TYPE	CONDITION	FRAME AND GRATE
<b>STORM SEWER</b>		
MANHOLE	CLOSED LID	R-1713, SOLID SELF SEALING LID IMPRINTED "STORM"
INLET	PAVEMENT, OPEN LID	R-2504, TYPE D GRATE
	SWALE	R-4340-B
	PARKWAY, OPEN LID	R-2504, TYPE D GRATE
	BARRIER CURB/GUTTER (B6.12)	R-3281-A OR AL
	BARRIER CURB/GUTTER (B6.18)	R-3278-A OR AL
CATCH BASIN	BARRIER CURB/GUTTER (B6.24)	R-3278-A OR AL
	DEPRESSED CURB/GUTTER	R-2504, TYPE D GRATE
	MOUNTABLE CURB/GUTTER (M3.12)	R-3501-E2
CATCH BASIN	MOUNTABLE CURB/GUTTER (M6.12)	R-3503-B
	SWALE	R-4340-B
	PAVEMENT, OPEN LID	R-2504, TYPE D GRATE
CATCH BASIN	PARKWAY, OPEN LID	R-2504, TYPE D GRATE
	SWALE	R-4340-B
	BARRIER CURB/GUTTER (B6.12)	R-3281-A OR AL
	BARRIER CURB/GUTTER (B6.18)	R-3278-A OR AL
	BARRIER CURB/GUTTER (B6.24)	R-3278-A OR AL
CATCH BASIN	DEPRESSED CURB/GUTTER	R-2504, TYPE D GRATE
	MOUNTABLE CURB/GUTTER (M3.12)	R-3501-E2
	MOUNTABLE CURB/GUTTER (M6.12)	R-3503-B
<b>SANITARY SEWER</b>		
MANHOLE	CLOSED LID	R-1713, SOLID SELF SEALING LID IMPRINTED "SANITARY"
<b>WATER MAIN</b>		
VALVE VAULT	CLOSED LID	R-1713, SOLID SELF SEALING LID IMPRINTED "WATER"

**FRAME AND GRATE SCHEDULE UT-4**

CITY OF NORTH CHICAGO  
1850 LEWIS AVENUE  
NORTH CHICAGO, ILLINOIS 60064  
TEL: 847-596-8691  
CONSTRUCTION STANDARD Last Revised 10-18-12



**Figure # TRAB Tracer Wire Access Box**

Casting conforms to:  
ASTM specification A-48 Class 30  
Country of Origin: USA

ABS conforms to:  
ASTM specification D1788  
Country of Origin: USA

C.P. Test Services - Valvo, Inc.

Drawing File: J:\2012\11\Arden Shores Estates\DWG\157161 - SPEC.DWG Rev. 2012-11-11.dwg

DESIGNED BY: MRT/DMW	DATE: 4-26-16	<p><b>GREENGARD, INC.</b> Engineers • Surveyors • Planners 111 Barclay Blvd., Suite 310, Lincolnshire, Illinois 60069-3623 PHONE: 847-634-3883 FAX: 847-634-0687 E-MAIL: 231@GREENGARDINC.COM ILL. REGISTRATION NO. 184-000995</p>	SCALE: NONE	L.C.P.W.D. - ARDEN SHORES ESTATES WATERMAIN
CHECKED BY: DRF	DATE: 4-26-16		DRAWING NO. 57161	
APPROVED BY: DMW	DATE: 4-26-16		SHEET 14 of 14	
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