

**SANITARY SEWER NOTES:**

- ALL SANITARY SEWER MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE KENT COUNTY DEPARTMENT OF PUBLIC WORKS (KCDPW) STANDARD CONSTRUCTION SPECIFICATIONS FOR SANITARY SEWER INSTALLATION.
- SANITARY SEWER CONSTRUCTION IS TO BE INSPECTED BY WILCOX PROFESSIONAL SERVICES. PRESSURE AND MANHOLE TESTING OF THE SEWER TO BE PERFORMED BY THE CONTRACTOR, WITNESSED AND APPROVED BY WILCOX PROFESSIONAL SERVICES.
- EXISTING SEWER LINES ARE TO BE PROTECTED FROM DEBRIS AND CONTAMINATION. THE CONTRACTOR SHALL FURNISH & PLACE MANHOLE CHANNEL PROTECTION (DURING CONSTRUCTION) AS REQUIRED BY THE TOWNSHIP OR THEIR REPRESENTATIVES.
- THE CONTRACTOR SHALL NOTIFY WILCOX PROFESSIONAL SERVICES 48 HOURS (TWO WORKING DAYS) PRIOR TO BEGINNING CONSTRUCTION.
- ALL LATERAL PIPE AND FITTINGS DEEPER THAN 16" SHALL BE PVC SDR23.5.
- ALL SANITARY MANHOLE COVERS SHALL BE PLACED 9" ABOVE GRADE OUTSIDE THE INFLUENCE OF ROADWAY SHOULDERS AND/OR DEVELOPED AREAS SUCH AS OPEN FIELDS, HIGHWAY OR COUNTY ROAD ROWS, AS DETERMINED BY THE ENGINEER.
- HOLES OR LEAKS IN MANHOLES WILL NOT BE PERMITTED.
- APPLY MASTIC COATING ON OUTSIDE OF ALL MANHOLE STRUCTURES.
- MAXIMUM HEIGHT FROM RIM GRADE TO THE TOP OF THE PRECAST CONE IS 24" FOR ALL MANHOLES.
- ALL MANHOLE STRUCTURES SHALL BE BACKFILLED WITH COMPACTED SAND WITHIN LIMITS OF EXCAVATION FOR MANHOLE.
- ALL MANHOLE CASTINGS SHALL BE SECURED TO MANHOLE RINGS PER STANDARD DETAIL.
- GROUT GAP BETWEEN SANITARY PIPE AND MANHOLE OPENING ON ALL MANHOLES.
- FLEXIBLE BUTYL RUBBER BASED TAPE WILL BE USED WITH STANDARD O-RING SEALS ON ALL MANHOLE JOINTS. ALL EXTERIOR JOINTS OF MANHOLES WILL BE SEALED WITH A FLEXIBLE BUTYL RUBBER BASED TAPE (1/2" WIDE). JOINTS SHALL BE CLEAN BEFORE APPLYING, AND PRIMER USED ACCORDING TO MANUFACTURER RECOMMENDATIONS.
- ALL CONCRETE USED IN MANHOLES WILL MEET A MINIMUM 3,500 PSI.
- WHEN NECESSARY, LEAKS IN MANHOLES WILL BE FIXED BY THE MANHOLE MANUFACTURER USING AV-202 MULTIGROUT OR APPROVED EQUAL. THE INSIDE JOINT WILL THEN BE SEALED WITH APPROVED HYDRAULIC CEMENT.
- MANHOLES SHALL BE FABRICATED WITH ADEQUATE SLUMP. DRY MIXES RESULTING IN ROCK POCKETS OR HONEY COMBS WILL BE REJECTED.
- RUBBER RECYCLED ADJUSTING RING (1" TO 3") WILL BE ALLOWED IN PLACE OF CONCRETE.
- ALL CONE/CASTING CONNECTIONS WITH ADJUSTING RINGS WILL HAVE CONCRETE CAST IN PLACE OUTSIDE TO SEAL JOINT AS SHOWN IN SEWER CASTING DETAIL THIS SHEET. 12" WIDE BUTYL TAPE WILL NOT BE PERMITTED AT THIS LOCATION.

**GENERAL NOTES**  
(March 1, 1995)

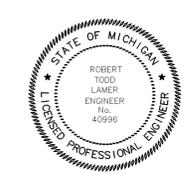
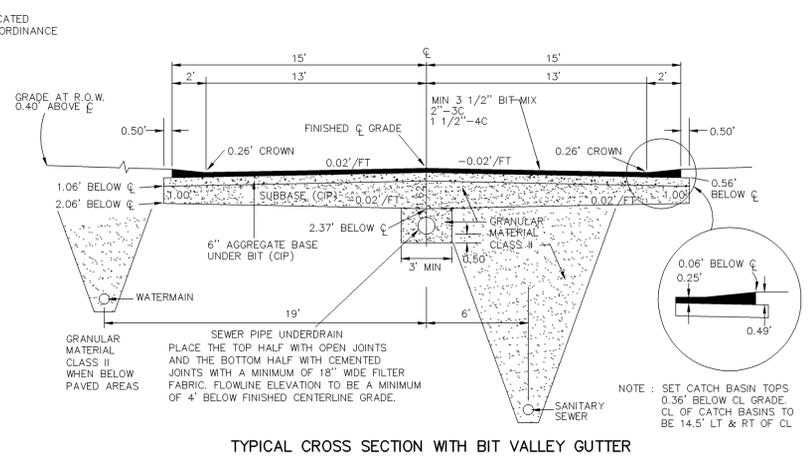
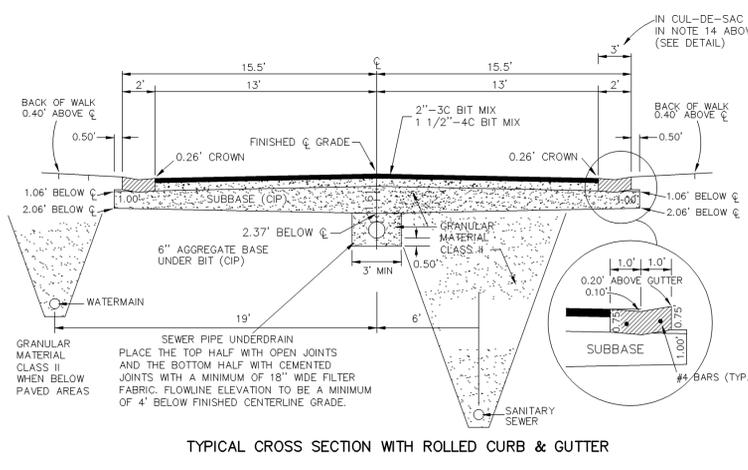
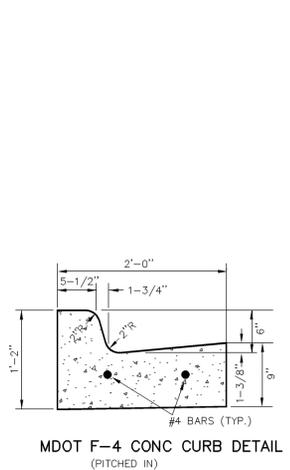
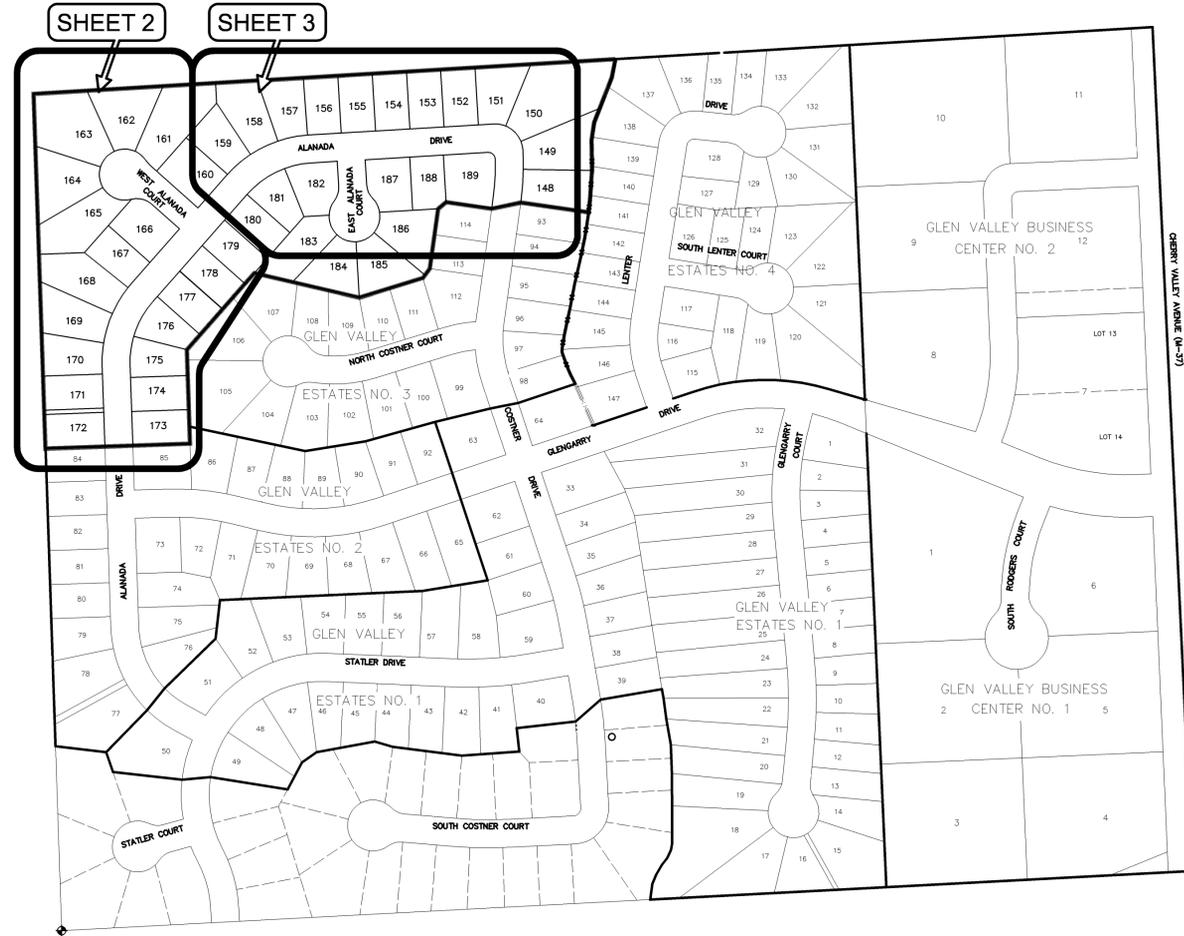
- The performance of this work shall be governed by the Michigan Department of Transportation (MDOT) current Standard Specifications for Highway Construction except where modified by the requirements of the Kent County Road Commission (KCRC).
- Roadway construction shall conform to the KCRC Standards as follows:  

ITEM	STANDARD PLAN NO.
Concrete Curb and Gutter	MDOT Det. F-4 (mod)
Catchbasins and Manholes	K-CB-1
Catchbasins and Manhole Covers	K-CBC-1
Driveway Approaches	K-DW-1
Guard Posts, Drainage Marker Post, Bituminous Downspout and Misc. Special Details.	K-SD-1&2
- The KCRC and any affected agency or utility shall be notified a minimum of 3 working days before the start of construction, excluding Saturdays, Sundays and holidays.
- All necessary permits must be obtained prior to the beginning of work.
- Traffic signs, barricades, or other devices necessary to insure safety to the public shall be placed prior to the beginning of work.
- Sod and loam topsoil shall be removed the width of the subgrade and can be wasted outside of the roadway. Treatment of peat marshes shall be in accordance with MDOT Standard Method A-1.
- Where unsuitable material is encountered, it shall be excavated the width of the subgrade to a depth of 5' below finished grade and wasted outside the right-of-way. Backfill shall meet granular material C1 II requirements.
- Where unforeseen subsoil conditions warrant it, sewer pipe underdrain, approved by the KCRC Engineering Department, shall be placed during construction.
- Outlets of storm sewers, ditches and areas where concentrations of runoff occur shall be protected against erosion by sodding, riprap, mulch blankets or other means approved by the Engineer. End sections are required on all culverts 18" or larger diameter.
- Drainage marker posts shall be placed at the ends of all culverts and storm sewers 48" or less in diameter.
- The subgrade and each successive improved layer of material shall be checked for grade and density and approved by the Consulting Engineer and Wilcox Professional Services, LLC prior to placing subsequent layers.
- Aggregate and Class AA Approach shall be placed and compacted in accordance with KCRC specifications. All density reports will be sent to the KCRC Engineering Department prior to paving.
- All graded areas within the right-of-way shall be seeded, fertilized and mulched within ten (10) working days of final grading.
- Catchbasin grates shall be used according to the following, with East Jordan Iron Works or equivalent castings:  

GRATES	EJW
36" Cul-de-sac Gutter	Type BB-3 #7030
Valley Gutter on Grade	Type C4 #7065
Valley Gutter in a Sag	Type BB-3 #7030
Curb and Gutter on Grade	Type K #7045
Curb and Gutter in a Sag	Type BB #7030
- Curb returns at intersections shall be constructed with dub-downs for future sidewalk ramps per detail K-SD-1.
- The Consulting Engineer shall maintain certification of all materials used on the project. Copies of the certifications shall be available upon request.
- Bituminous paving shall consist of two courses. The leveling course shall be 2" of Bituminous Mix No. 3C and the surface course shall be 1 1/2" Bituminous Mix No. 4C. Bituminous surface course shall not be placed after November 1. Written approval from the KCRC's Engineering Department will be required for placement of any bituminous leveling course after November 1. Placement of bituminous material without written approval will be cause for non-acceptance or removal by the owner.
- Bituminous paving will not be allowed prior to approval of the sanitary sewer by the appropriate agency.
- All structures are to be adjusted prior to the placing of the second course of bituminous paving. The excavated area around the adjusted structure must be compacted to 98% of the maximum density.
- Street signage placement shall be coordinated with the Village of Caledonia and shall be consistent with the signage in previous phases.

**WATER MAIN NOTES:**

- ALL WATERMAIN MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CALEDONIA TOWNSHIP STANDARDS AND/OR WITH KENT COUNTY DEPARTMENT OF PUBLIC WORKS (KCDPW) STANDARD CONSTRUCTION SPECIFICATIONS FOR WATERMAIN INSTALLATION.
- WATERMAIN CONSTRUCTION IS TO BE INSPECTED BY WILCOX PROFESSIONAL SERVICES, REPRESENTING CALEDONIA TOWNSHIP. PRESSURE TESTING OF THE WATERMAIN TO BE PERFORMED BY THE CONTRACTOR, WITNESSED AND APPROVED BY WILCOX PROFESSIONAL SERVICES, REPRESENTING CALEDONIA TOWNSHIP. CHLORINATION OF THE WATERMAIN WILL BE WITNESSED BY WILCOX PROFESSIONAL SERVICES, REPRESENTING CALEDONIA TOWNSHIP, AND THE COLLECTING OF WATER SAMPLES WILL BE DONE BY WILCOX PROFESSIONAL SERVICES, REPRESENTING CALEDONIA TOWNSHIP.
- EXISTING WATER LINES ARE TO BE PROTECTED FROM DEBRIS AND CONTAMINATION.
- HYDRANTS AND VALVES SHALL OPEN CLOCKWISE.
- THE CONTRACTOR SHALL NOTIFY WILCOX PROFESSIONAL SERVICES 48 HOURS (TWO WORKING DAYS) PRIOR TO BEGINNING WATERMAIN CONSTRUCTION.
- MINIMUM DEPTH OF WATERMAIN SHALL BE 5.75' BELOW THE PROPOSED GRADE TO THE CENTER OF THE PIPE UNLESS OTHERWISE SPECIFIED IN THE PLANS.
- CONTRACTOR SHALL COVER ALL WATERMAIN AND FITTINGS WITH POLYWRAP.
- HYDRANTS SHALL HAVE A 5' BURY DEPTH.
- BACKFILL HYDRANTS AND VALVES WITH COMPACTED SAND WITHIN THE EXCAVATION LIMITS TO FILL GRADE.
- ALL HYDRANTS SHALL BE PUMPED DOWN AFTER USE ON A DAILY BASIS.
- FILTER CLOTH SHALL BE WRAPPED AROUND ALL BASES OF VALVE BOXES AND WATERMAIN TO PREVENT SAND FROM ENTERING THE VALVE BOX.
- VALVE BOX EXTENSIONS SHALL BE ADDED TO THE BOTTOM SECTION OF THE VALVE BOX. IN NO CASE SHALL THE COVER BE REMOVED AND BE REPLACED WITH A MALE EXTENSION PIECE. ALL SECTIONS OF THE BOX SHALL OVERLAP AND THREAD ONTO THE SECTION BENEATH.
- USE A-Y McDONALD MODEL 3825 OR EQUAL DOUBLE STRAP BRASS SADDLES AT CORPORATION STOPS FOR 2" SERVICE CONNECTION ON 12" PIPE OR SMALLER PIPE.
- CORPORATION STOP VALVES SHALL BE A-Y McDONALD MODEL 4701B-22 OR FORD MODEL FB 1002 BALLCORP OR EQUAL.
- CURB STOP VALVES SHALL BE A-Y McDONALD MODEL 6100-22 OR FORD B44 OR APPROVED EQUAL ALL WITH MINNEAPOLIS PATTERN.
- ALL CURB BOXES SHALL BE MINNEAPOLIS TELESCOPING TYPE.
- ALL HYDRANTS SHALL BE EJW 56R.
- ALL GATE VALVES SHALL BE FULLY ENCAPSULATED AND MADE OF DUCTILE IRON.
- CURB STOP VALVES SHALL NOT BE EQUIPPED WITH EXTENSION RODS.
- PIPE RESTRAINT WILL BE ACCOMPLISHED THROUGH THE USE OF MECHANICAL JOINT PIPE OR OTHER APPROVED METHODS. IN NO CASE SHALL LOCKING GASKETS BE USED FOR MEANS OF RESTRAINT.
- TWO WEDGES ARE TO BE USED IN EACH PIPE JOINT TO PROVIDE CONTINUITY.
- LOCKING GASKETS ARE UNACCEPTABLE. INSTALLED RESTRAINTS SHALL BE VISIBLE.



**COVER SHEET**  
For: GLEN VALLEY ESTATES NO. 5

In: PART OF THE SE 1/4 OF SECTION 20, T5N, R10W, VILLAGE OF CALEDONIA, KENT COUNTY, MICHIGAN.

Revisions	1/2/2004 AS BUILT WATERMAIN PERMIT NO. W036151 SANITARY PERMIT NO. S034124	Drawn by: MK Approved by: RTL File No: O22230E Sheet 1 of 3 Date: 4-30-03	exxel engineering inc. 5252 CLYDE PARK, S.W. • GRAND RAPIDS, MI. 49509 PHONE (616) 531-3660 O22230E-5DP-C5-PLT
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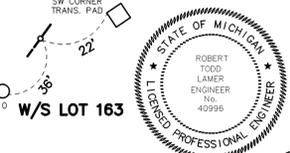
**ALANADA DRIVE & WEST ALANADA COURT**

FOR : GLEN VALLEY ESTATES NO. 5

IN : PART OF THE SE 1/4, SECTION 20, T5N, R10W, VILLAGE OF CALEDONIA, KENT COUNTY, MICHIGAN

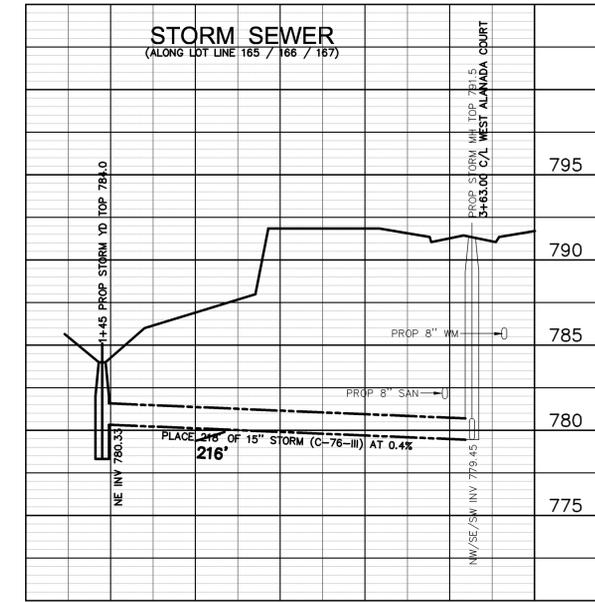
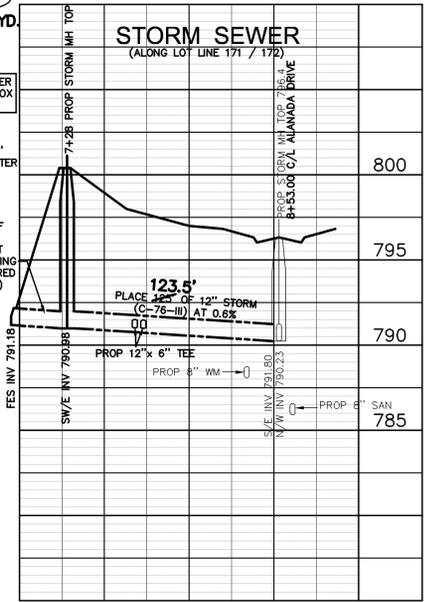
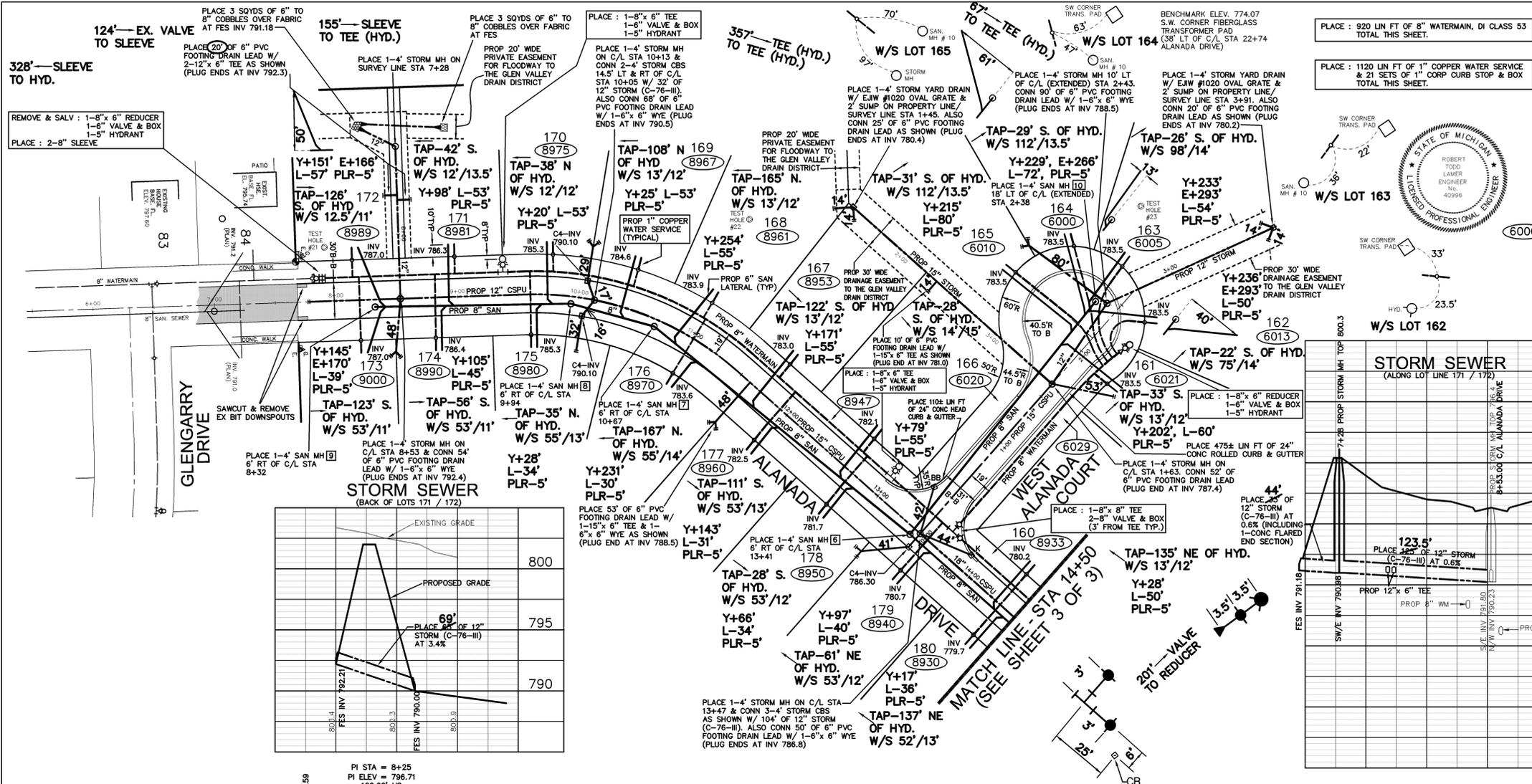
Revisions		5252 CLYDE PARK, S.W. • GRAND RAPIDS, MI 49509 PHONE (616) 531-3660	Drawing number: <b>E F</b> Date: 4-30-03
1/2/2004 AS BUILT	7/31/03 REV PER INT. DETAILS (Cnr.)		
6/2/03 REV PER VILLAGE ENGINEER (S&C)	5/28/03 REV PER VILLAGE ENGINEER (S&C)	Drawn by: MK	Approved by: RTL
5/28/03 REV PER R.G.D.C. (S&C)		File No: 022230E	Sheet: 2 of 3
		Date: 4-30-03	

**CAUTION: BEFORE DIGGING CALL MISS DIG AT 1-800-482-7171 FOR UNDERGROUND UTILITY LOCATIONS.**



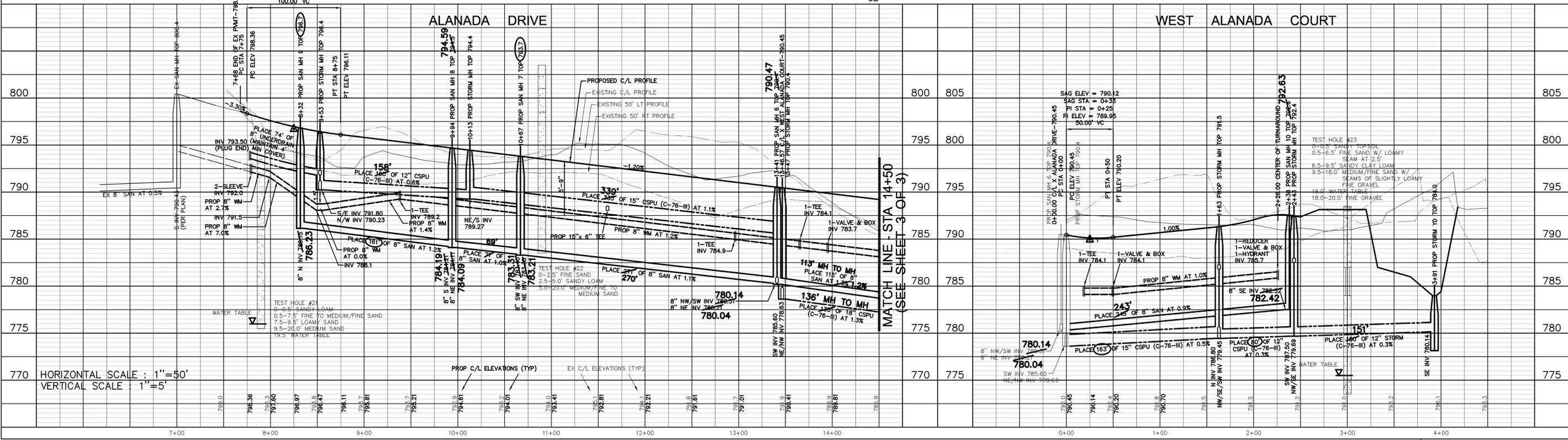
6000 = STREET ADDRESSES

SCALE: 1" = 50'



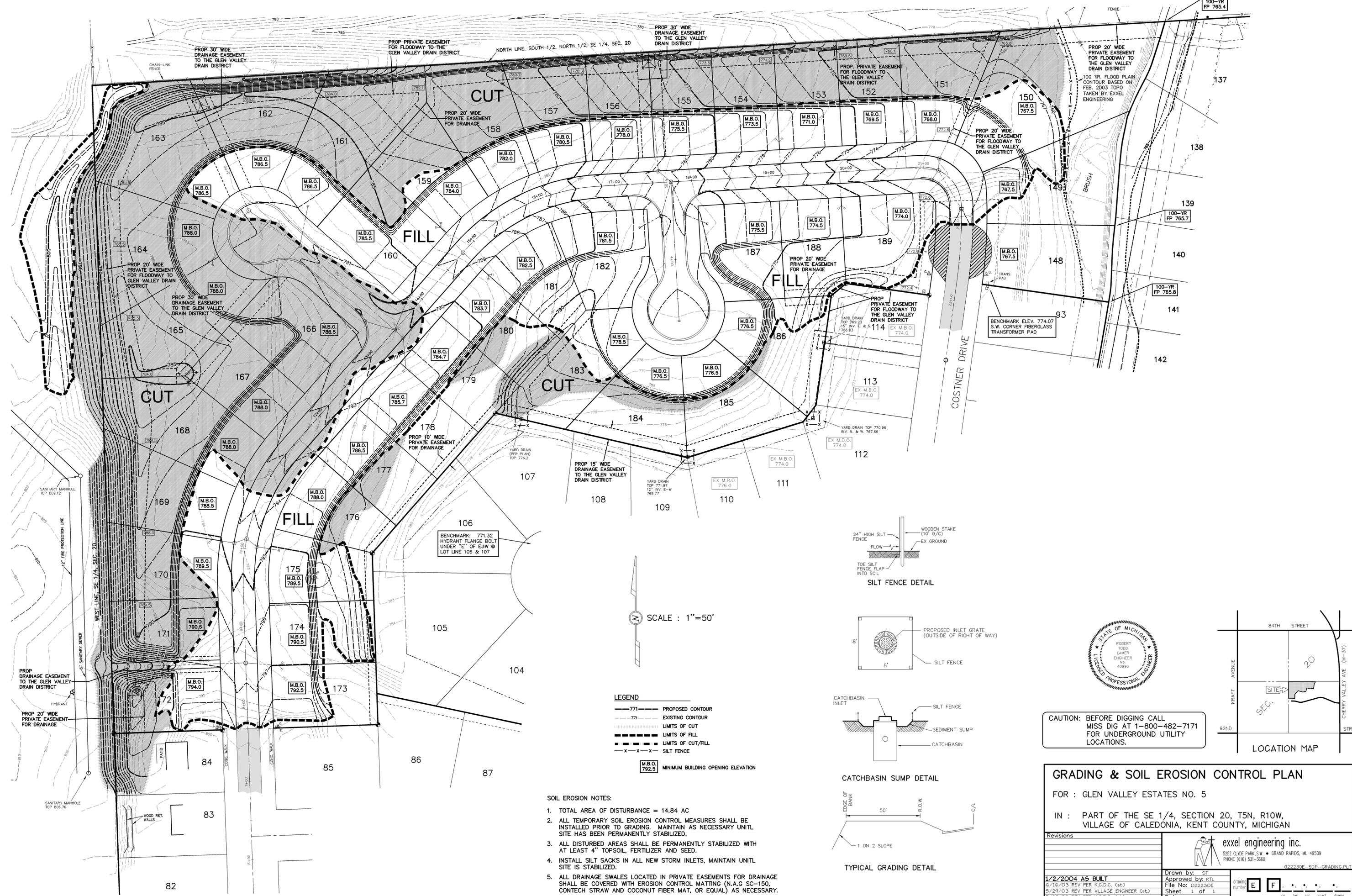
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HORIZONTAL SCALE : 1"=50'  
VERTICAL SCALE : 1"=5'

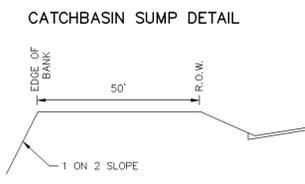
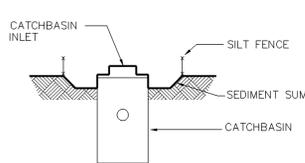
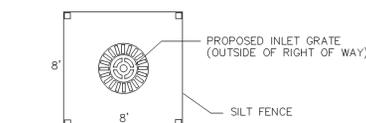
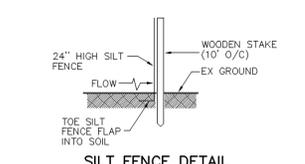




SCALE : 1"=50'

- LEGEND**
- 771--- PROPOSED CONTOUR
  - 771--- EXISTING CONTOUR
  - LIMITS OF CUT
  - LIMITS OF FILL
  - LIMITS OF CUT/FILL
  - x-x-x-x- SILT FENCE
  - M.B.O. 792.5 MINIMUM BUILDING OPENING ELEVATION

- SOIL EROSION NOTES:**
- TOTAL AREA OF DISTURBANCE = 14.84 AC
  - ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO GRADING. MAINTAIN AS NECESSARY UNTIL SITE HAS BEEN PERMANENTLY STABILIZED.
  - ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED WITH AT LEAST 4" TOPSOIL, FERTILIZER AND SEED.
  - INSTALL SILT SACKS IN ALL NEW STORM INLETS, MAINTAIN UNTIL SITE IS STABILIZED.
  - ALL DRAINAGE SWALES LOCATED IN PRIVATE EASEMENTS FOR DRAINAGE SHALL BE COVERED WITH EROSION CONTROL MATTING (N.A.G SC-150, CONTECH STRAW AND COCONUT FIBER MAT, OR EQUAL) AS NECESSARY.



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**GRADING & SOIL EROSION CONTROL PLAN**

FOR : GLEN VALLEY ESTATES NO. 5

IN : PART OF THE SE 1/4, SECTION 20, T5N, R10W, VILLAGE OF CALEDONIA, KENT COUNTY, MICHIGAN

Revisions	exel engineering inc.
1/2/2004 AS BUILT	5252 CLYDE PARK, S.W. • GRAND RAPIDS, MI. 49509 PHONE (616) 531-3660
6/16/03 REV PER R.C.D.C. (cst)	022230E-GRADING.PLT
5/24/03 REV PER VILLAGE ENGINEER (cst)	Drawn by: ST
5/29/03 REV PER R.C.D.C. (cst)	Approved by: RTL
	File No: 022230E
	Sheet 1 of 1
	Date: 4-30-03