

CITY OF MASSILLON GENERAL NOTES

- CONTRACTOR SHALL CHECK DETAIL DRAWINGS FOR MINIMUM GRADE AND BACKFILL REQUIREMENTS.
- ALL COMBINATION CONCRETE CURB AND GUTTER TO BE MASSILLON STANDARD, EXCEPT WHERE VARIATIONS ARE TO BE EXTENDED OR MET. SEE SPECIFICATION BOOK AND PLANS.
- EXCAVATION FOR CONCRETE CURB AND GUTTER SHALL BE INCLUDED IN THE COST PER LINEAL FOOT OF SAID CURB AND GUTTER.
- ALL CATCH BASINS AND MANHOLES TO BE ADJUSTED TO GRADE WHERE NECESSARY.
- ALL CONCRETE TO BE 1:2: 4-6 BAG MIX, 28 DAY - 3000 PSI COMPRESSIVE STRENGTH; MAX. SLUMP TO BE 4".
- ALL MATERIALS USED WILL BE NEW - NO SALVAGED MATERIAL WILL BE ACCEPTED, EXCEPT CASINGS, AS APPROVED.
- IF CONTRACTOR EXCAVATES DEEPER THAN NECESSARY FOR CURB AND GUTTER, CONTRACTOR WILL FURNISH O.D.O.T. 304 AGGREGATE AND TAMP BEFORE CURB AND GUTTER IS CONSTRUCTED.
- IF SUBGRADE IS UNSUITABLE, CONTRACTOR WILL EXCAVATE AND REPLACE SUCH MATERIAL WITH CRUSHER RUN GRAVEL, AT THE DISCRETION OF THE INSPECTOR OR CITY ENGINEER. THIS FILL TO BE PLACED IN 6" LAYERS OR LESS. SAID FILL TO BE COMPACTED TO 95% LABORATORY DRY WEIGHT BEFORE ADDITIONAL LAYERS ARE ADDED. CONTRACTOR WILL BE PAID FOR EXTRA GRAVEL AND EXCAVATION. THIS COMPACTED TO BE DONE BEFORE FORMS ARE PLACED.
- CONTRACTOR TO BACKFILL CURB IMMEDIATELY AFTER CURB HAS BEEN IN PLACE FOR 48 HOURS.
- CONTRACTOR WILL NOTIFY ENGINEER WHEN HE IS IN NEED OF CONSTRUCTION STAKES AND THIS OFFICE WILL COMPLY WITHIN A PERIOD OF 48 HOURS.
- ALL STORM SEWER PIPES WITHIN PAVEMENT LIMITS SHALL BE REINFORCED CONCRETE PIPE (O.D.O.T. 706.02) AND SHALL BE TYPE 'B' CONDUIT IN ACCORDANCE WITH O.D.O.T. 603 CLASS 'B' BEDDING AND GRANULAR BACKFILL. ALL STORM SEWER OUTSIDE PAVEMENT LIMITS SHALL BE SMOOTH LINED CORRUGATED POLYETHYLENE (O.D.O.T. 707.33) OR REINFORCED CONCRETE PIPE (O.D.O.T. 706.02) AND SHALL BE TYPE 'C' CONDUIT IN ACCORDANCE WITH O.D.O.T. 603 WITH CLASS 'C' BEDDING AND SUITABLE SOIL BACKFILL.
- DOWNSPOUT HEADERS SHALL BE 6" PVC (SDR 21) PIPE (UNLESS OTHERWISE NOTED ON THE PLANS) AND SHALL BE DIRECTLY CONNECTED TO THE STORM SEWER WITH APPROVED TEE OR SADDLE CONNECTIONS. HEADERS SHALL EXTEND 12" INTO THE LOTS OR BEYOND FURTHEST UTILITY, WHICHEVER IS GREATER.
- CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES BEFORE ANY WORK IS BEGUN. THE CITY OF MASSILLON IS NOT RESPONSIBLE FOR ANY LOST TIME DUE TO UTILITY RELOCATION.
- MANHOLES AND CATCH BASINS SHALL BE CONSTRUCTED IN CONFORMANCE WITH MASSILLON CITY STANDARDS.
- CONTRACTOR SHALL CONTACT THE CITY OF MASSILLON ENGINEERING DEPARTMENT (GREG MCQUE) AT (330)830-1722 AT LEAST 2 DAYS PRIOR TO THE INITIATION OF CONSTRUCTION TO SCHEDULE A PRE-CONSTRUCTION MEETING.
- STREET LIGHTING IS REQUIRED. DEVELOPER SHALL COORDINATE WITH ELECTRIC UTILITY COMPANY FOR POLE LOCATION AND TYPE. THE DEVELOPER SHALL INSTALL, AT HIS COST, STREET SIGNS REPRESENTING THE NAMES OF ALL STREETS AT ALL INTERSECTIONS. DEVELOPER ALSO RESPONSIBLE FOR STOP SIGNS AND DIRECTIONAL SIGNS AS NECESSARY. ALL SIGNS SHALL CONFORM WITH CITY OF MASSILLON REGULATIONS.
- WHEN SPECIFIED ON PLANS OR SPECIFICATIONS, CONTINGENCY ITEMS ARE TO BE PERFORMED ONLY UNDER THE DIRECTION OF THE CITY ENGINEER. THE CONTRACTOR SHALL NOT ORDER ANY CONTINGENCY MATERIAL OR PERFORM ANY WORK UNTIL DIRECTED BY THE ENGINEER. THE ACTUAL WORK LOCATION AND QUANTITIES FOR SUCH ITEMS SHALL BE DOCUMENTED BY THE CONTRACTOR AND THE ENGINEER. THE DEVELOPER IS RESPONSIBLE FOR THE COST OF SUCH ITEMS AND SHALL NOT BE PART OF THE BID DOCUMENT.
- BEFORE ACCEPTANCE OF THE ROAD PAVEMENT SUBGRADES BY THE CITY OF MASSILLON ENGINEER, SUBGRADES SHALL BE TESTED IN ACCORDANCE WITH O.D.O.T. ITEM 203.13. IN LIEU OF SUBGRADE TESTING PER ITEM 203.13, PROOF ROLLING IN ACCORDANCE WITH O.D.O.T. ITEM 203.14 MAY BE SUBSTITUTED.
- WHEREVER UNSTABLE SOIL SUBGRADE CONDITIONS ARE ENCOUNTERED THAT ARE UNSUITABLE PER O.D.O.T. 203 SPECIFICATION AND/OR DETERMINED BY THE CITY OF MASSILLON ENGINEERING DEPARTMENT, ADDITIONAL EXCAVATION AND SUBSEQUENT BACKFILLING SHALL BE DONE BY THE DEVELOPER'S CONTRACTOR AND PAID FOR BY THE DEVELOPER UNTIL SUCH CONDITIONS ARE CORRECTED AND APPROVED BY THE CITY OF MASSILLON ENGINEER.
- SUBGRADE TESTING OR PROOF ROLLING MUST BE WITNESSED AND APPROVED BY THE CITY OF MASSILLON ENGINEERING DEPARTMENT PRIOR TO THE PLACEMENT OF THE PAVEMENT SUBBASE MATERIAL. CONTRACTOR SHALL CONTACT THE CITY ENGINEERING DEPARTMENT AT (330)830-1722 TO SCHEDULE.
- AS BUILT DRAWINGS ARE REQUIRED AND SHALL BE SUBMITTED TO THE CITY OF MASSILLON ENGINEERING DEPARTMENT UPON COMPLETION OF THE PROJECT.
- CURBS SHALL BE DROPPED FOR HANDICAP RAMPS AT ALL INTERSECTIONS. SEE THE INTERSECTION DETAILS FOR THE GENERAL LOCATION OF THE RAMPS AND SHEET 7 FOR A HANDICAP RAMP DETAIL.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF MASSILLON FIRE DEPARTMENT, MASSILLON POLICE DEPARTMENT, CITY ENGINEER AND LOCAL (MASSILLON, TUSLAW, JACKSON AND PERRY) SCHOOL DISTRICT AT LEAST 48 HOURS IN ADVANCE OF ANY STREET CLOSING OR TRAFFIC CHANGE.

OHIO F.P.A. NOTES

- HYDROSTATIC TEST SHALL NOT EXCEED 100 GAL. PER INCH OF PIPE DIAMETER PER MILE PER DAY FOR ANY SECTION OF THE SYSTEM.
- AIR LEAKAGE TESTING OF PLASTIC SANITARY SEWER SHALL BE PER A.S.T.M. F-1417.
- MANHOLE AIR/VACUUM TESTING SHALL BE PER A.S.T.M. C-1244.
- BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
- ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
- THE PROPOSED FACILITIES MUST MAINTAIN A MINIMUM OF 35 PSI PRESSURE DELIVERED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.

SANITARY SEWER NOTES

- SANITARY SEWERS AND APPURTENANCES SHALL BE CONSTRUCTED ACCORDING TO CITY OF MASSILLON ENGINEERING DEPARTMENT SPECIFICATIONS AND DETAILS IN EFFECT AT TIME OF CONSTRUCTION.
- ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
- THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS ALONG THE ROUTE OF THE SANITARY SEWER AT LEAST THREE (3) DAYS PRIOR TO START OF CONSTRUCTION.
- THE CONTRACTOR SHALL ALERT THE UTILITIES PROTECTION SERVICE AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY MAINTAINING EXISTING SANITARY FLOW DURING THE CONSTRUCTION AND TESTING OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR'S METHODS FOR MAINTAINING FLOW MUST BE APPROVED BY THE CITY OF MASSILLON ENGINEERING DEPARTMENT AT THE PRE-CONSTRUCTION MEETING.
- ALL ROUGH GRADING TO WITHIN SIX (6) INCHES OF FINISHED GRADE SHALL BE COMPLETED WITHIN THE RIGHT-OF-WAY AND EASEMENTS PRIOR TO SANITARY SEWER CONSTRUCTION.
- BULKHEADS SHALL BE ERECTED IN EXISTING MANHOLES WHERE TAPS FOR NEW MAINLINE SEWERS ARE MADE AND SHALL REMAIN IN PLACE UNTIL THE NEW SEWERS ARE COMPLETE, TESTED AND APPROVED. IN CASES WHERE A BULKHEAD WOULD INTERRUPT THE FLOW FROM EXISTING SERVICE CONNECTIONS, THE BULKHEAD SHALL BE PLACED IN THE FIRST NEW MANHOLE UPSTREAM OF THE EXISTING MANHOLE.
- MINIMUM VERTICAL CLEARANCE BETWEEN SANITARY SEWER AND WATER LINE SHALL BE 18 INCHES. MINIMUM HORIZONTAL SEPARATION SHALL BE 10 FEET.
- SANITARY SEWER SERVICE LATERALS SHALL BE 8-INCH DIAMETER AND BE LAID AT NO LESS THAN 1.0% GRADE.
- FOR NEW SUBDIVISION CONSTRUCTION, SEWER SERVICE LATERALS SHALL EXTEND 12 FEET INTO EACH LOT WHEN THE MAIN SEWER IS IN A STREET RIGHT-OF-WAY, AND SHALL TERMINATE AT THE EASEMENT LINE WHEN THE MAIN SEWER IS IN AN EASEMENT. FOR OTHER SEWER EXTENSIONS, SEWER SERVICE LATERALS SHALL TERMINATE AT THE RIGHT-OF-WAY LINE OR THE EASEMENT LINE, WHICHEVER IS APPLICABLE.
- SERVICE STACKS SHALL BE DUCTILE IRON PIPE REGARDLESS OF MAIN SEWER MATERIAL. A CAST IRON TEE SHALL BE INSTALLED IN THE MAIN SEWER. CONCRETE ENCASEMENT WILL NOT BE REQUIRED.
- MINIMUM COVER OVER SANITARY SEWER SHALL BE 4 FEET.
- ACCEPTABLE SANITARY SEWER PIPE MATERIALS ARE AS FOLLOWS:

MATERIAL DESCRIPTION	SPECIFICATIONS		
	PIPE	JOINT	INSTALLATION
PVC SMOOTH EXTERIOR	ASTM D-3034	ASTM D-3212	ASTM D-2321
VCP EXTRA STRENGTH	ASTM C-700	ASTM C-425	ASTM C-12
DCIP (CLASS 52)	AWWA C-151	AWWA C-110/C-111	AWWA C-151

- ALL SANITARY SEWERS, 8-INCH DIAMETER AND LARGER, MUST PASS AN INTERNAL TELEVISION INSPECTION. THE CONTRACTOR SHALL PROVIDE COMPLETE INTERNAL INSPECTION VIDEOTAPE TO THE CITY OF MASSILLON ENGINEERING DEPARTMENT. THE VIDEOTAPE PROCEDURE SHALL BE IN ACCORDANCE WITH CITY OF MASSILLON ENGINEERING DEPARTMENT SPECIFICATIONS.
- A DEFLECTION TEST SHALL BE REQUIRED FOR ALL FLEXIBLE PIPE OF 8-INCH DIAMETER AND LARGER. THE TEST SHALL BE CONDUCTED AT LEAST 30 DAYS AFTER COMPLETION OF BACKFILL AND SHALL BE IN ACCORDANCE WITH CITY OF MASSILLON ENGINEERING DEPARTMENT SPECIFICATIONS. THE ALLOWABLE DEFLECTION RATE SHALL NOT EXCEED FIVE (5%) PERCENT. TESTING SHALL BE IN ACCORDANCE WITH ASTM D-3034.
- ALL SANITARY SEWERS MUST PASS A LOW PRESSURE AIR TEST, WHICH SHALL BE CONDUCTED IN ACCORDANCE WITH ASTM F-1417 (PLASTIC PIPE) OR ASTM C-828 (CLAY PIPE). THE MAXIMUM ALLOWABLE TEST LEAKAGE SHALL BE 100 GAL/INCH OF DIAMETER/MILE/DAY.
- MANHOLE CONSTRUCTION SHALL MEET THE REQUIREMENTS OF ASTM C-478 AND C-443. ALL MANHOLES SHALL BE AIR/VACUUM TESTED IN ACCORDANCE WITH AND MEET ALL THE REQUIREMENTS OF ASTM C-1244.
- CONNECTIONS TO EXISTING MANHOLES SHALL BE CORE DRILLED, WITH BENCHES AND CHANNELS FORMED AND REPAIRED AS NECESSARY.
- ANY MANHOLE DROP ATTACHMENTS SHALL BE "OUTSIDE" TYPE.
- MANHOLE TOP OF CASTING ELEVATIONS MAY REQUIRE ADJUSTMENT DURING SITE GRADING. MANHOLE COVERS MAY NOT BE BURIED. UPON COMPLETION OF CONSTRUCTION AND RESTORATION, ALL MANHOLES, PROPOSED AND EXISTING, SHALL BE IN CONFORMANCE IN ALL RESPECTS WITH CITY OF MASSILLON ENGINEERING DEPARTMENT SPECIFICATIONS AND DETAILS.
- ALL SANITARY SEWER TRENCHES BENEATH PROPOSED OR EXISTING PAVEMENT SHALL BE COMPACTED IN LIFTS, IN A MANNER, AND WITH MATERIAL AS SPECIFIED BY THE CITY OF MASSILLON ENGINEERING DEPARTMENT AND ALL APPLICABLE O.D.O.T. SPECIFICATIONS.

ENGINEERS ESTIMATE

TOTAL ROADWAY	773.54 L.F.
TOTAL SANITARY SEWER	788.49 L.F.
TOTAL STORM SEWER	763.23 L.F.

WATER LINE NOTES

- THE WATER LINE SHALL BE INSTALLED SO THAT 4'-0" OF COVER, FROM GRADE TO THE TOP OF THE WATER LINE, IS MAINTAINED AS A MINIMUM.
- WATER LINE MATERIALS AND INSTALLATION PROCEDURES SHALL MEET OR EXCEED ALL APPLICABLE A.W.W.A. STANDARDS INCLUDING BUT NOT LIMITED TO C600 AND C651.
- THE CONTRACTOR SHALL CAREFULLY LAYOUT THE WATER LINE AND ALL RELATED FACILITIES TO INSURE THAT THEY ARE LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY AND/OR DESIGNATED UTILITY EASEMENTS AS INDICATED.
- MEGALUG RETAINERS REQUIRED AT ALL FITTINGS.
- THE PROPOSED FACILITIES WILL MAINTAIN A MINIMUM PRESSURE OF 35 P.S.I. DELIVERED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.
- BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS. C.O.W.C. MAY GRANT SPECIAL PERMISSION FOR BUILDINGS SIX STORIES AND HIGHER.
- A TYPE 1 TRENCH SHALL BE USED AND BACKFILLED WITH EXCAVATED MATERIAL PROVIDED THAT SAID MATERIAL CONSISTS OF LOAM, CLAY, SAND, GRAVEL, OR OTHER SUITABLE MATERIAL. BACKFILLING FOR ROAD AND DRIVEWAY CUTS SHALL BE AS A MINIMUM PROPERLY COMPACTED O.D.O.T. 304 AGGREGATE OR AS SPECIFIED BY THE LOCAL JURISDICTION.
- WATER SERVICES SHALL EXTEND 12' INTO THE LOTS OR BEYOND FURTHEST UTILITY, WHICHEVER IS GREATER, WITH THE CURB BOX INSTALLED 0.50' WITHIN THE RIGHT-OF-WAY. THE C.O.W.C. POINT OF DELIVERY IS THE OUTLET SIDE OF THE CURB STOP.
- CONTRACTOR MUST CONSTRUCT ALL WATER LINES AND WATER SERVICE LINES SUCH THAT A MINIMUM OF 10' HORIZONTAL CLEARANCE, 18" VERTICAL CLEARANCE ABOVE SANITARY SEWER AND A MINIMUM OF 12" VERTICAL CLEARANCE BELOW STORM SEWER IS MAINTAINED.
- WATER MAIN TO BE 8" DUCTILE IRON PIPE PRESSURE CLASS 350 WITH POLYWRAP OR 2" HDPE TUBING WITH TRACER WIRE AND MARKING TAPE PER SIZE INDICATED ON PLANS.
- HYDRANTS TO BE A.O.S.P.E.C. MUELLER CENTURION A423, U.S. PIPE M-94 OR CLOW MEDALLION.

ORCHARD HILL IMPROVEMENT PLANS

CITY OF MASSILLON
COUNTY OF STARK

STATE OF OHIO

SANITARY SEWER STORM SEWER WATER MAIN & PAVING

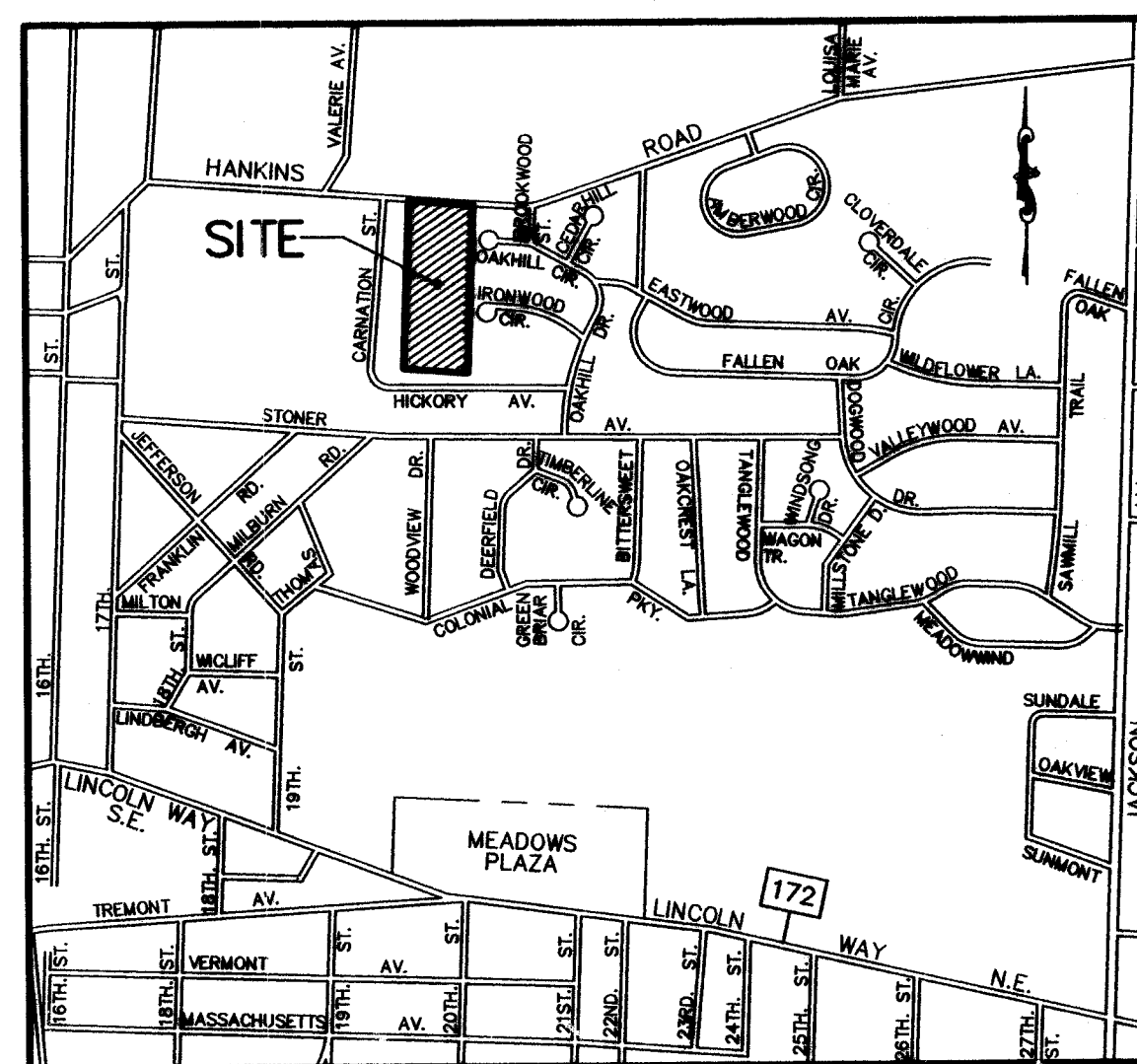
DESIGN ENGINEER

SPAGNUOLO & ASSOCIATES, LLC
3057 WEST MARKET STREET
SUITE 2A
FAIRLAWN, OHIO 44333
(330) 836-6661

OWNER/DEVELOPER

LEPP CONSTRUCTION, INC.
871 BELLEAU WOOD DRIVE
AKRON, OHIO 44303
(330) 836-7779 PHONE
REPRESENTATIVE - PETER J. LEPP

MAY, 2004



LOCATION MAP

1" = 1000'



SUBMITTED BY

Nicholas A. Spagnuolo
Nicholas A. Spagnuolo

Reg. Engineer No. 30609

DATE 9-7-04

APPROVED BY

Peter J. Lepp
Peter J. Lepp, Developer

DATE 9/8/04

PLAN APPROVALS

APPROVED BY THE CITY OF MASSILLON ENGINEER
THIS 20th DAY OF September, 2004.

Steve R. H.
CITY OF MASSILLON ENGINEER

WATERLINE IS APPROVED BY AQUA OHIO, INC. SUBJECT TO WATER MAIN EXTENSION AGREEMENT

THIS 22nd DAY OF SEPTEMBER, 2004.

Donald L. Snyder
AQUA OHIO, INC.

SANITARY SEWER PERMIT TO INSTALL (P.T.I.) HAS BEEN RECEIVED FROM THE OHIO ENVIRONMENTAL PROTECTION AGENCY

THIS 5th DAY OF OCTOBER, 2004.

WATERLINE PERMIT TO INSTALL (P.T.I.) HAS BEEN RECEIVED FROM THE OHIO ENVIRONMENTAL PROTECTION AGENCY

THIS 1st DAY OF SEPTEMBER, 2004.

STANDARD DRAWINGS

STANDARD DRAWING No.	DATE
O.D.O.T. CB No. 3	7 - 19 - 02
O.D.O.T. CB No. 3A	7 - 19 - 02
O.D.O.T. HW-2.1	7 - 19 - 02
O.D.O.T. CB NO. 2-2A	7 - 19 - 02

UNDERGROUND UTILITIES

2 WORKING DAYS
BEFORE YOU DIG

Call...800-362-2764 (Toll Free)
OHIO UTILITIES PROTECTION SERVICE

NON-MEMBERS
MUST BE CALLED DIRECTLY

ITEM

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TITLE SHEET

1
14

ORCHARD HILL

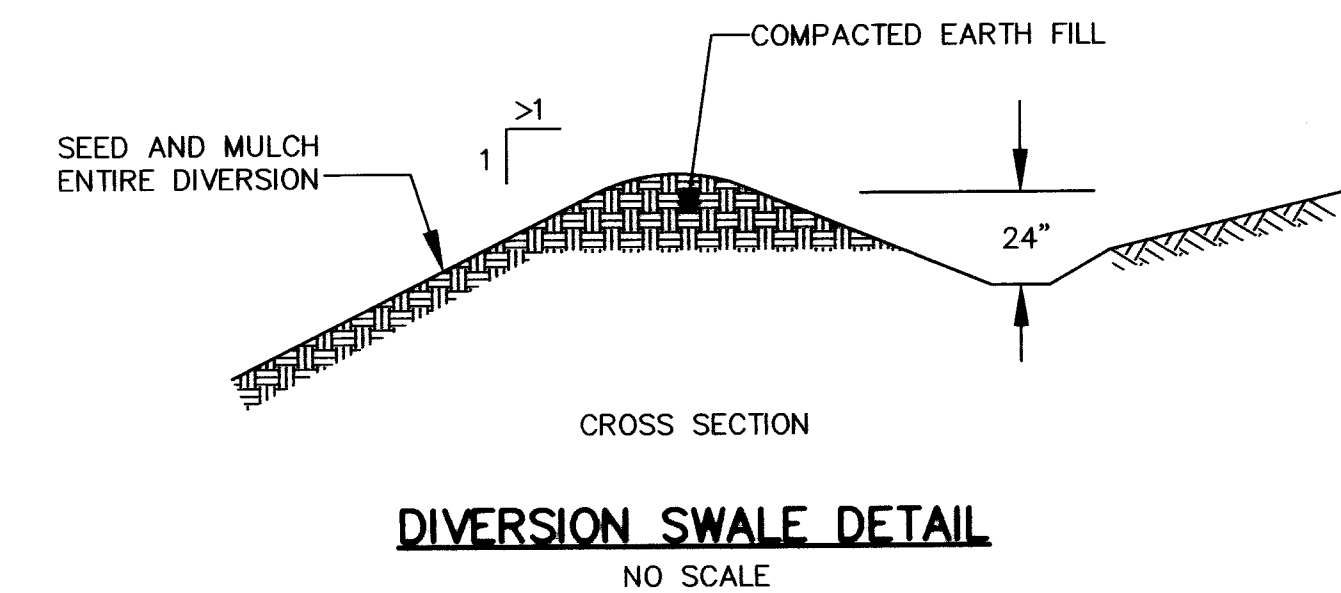
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REVISED: 8/10/04

EROSION CONTROL NOTES

1. INSTALL GEOTAB OR EQUAL FABRIC FENCE AS SHOWN 3.5' (HIGH) AS PER MANUFACTURERS RECOMMENDATIONS. TO BE USED DURING GRADING OPERATIONS AND UNTIL BARE AREAS ARE STABILIZED.
2. BUILDER IS RESPONSIBLE FOR EROSION CONTROL ON EACH INDIVIDUAL LOT. BUILDER MUST FILE INDIVIDUAL LOT NOTICE OF INTENT (NOI) WITH OHIO E.P.A.
3. OTHER EROSION CONTROL ITEMS MAY BE NECESSARY DUE TO ENVIRONMENTAL CONDITIONS.
4. REGULAR INSPECTION AND MAINTENANCE WILL BE PROVIDED FOR ALL EROSION CONTROL PRACTICES.
5. ALL EROSION AND SEDIMENT CONTROL PRACTICES MUST MEET THE STANDARDS AND SPECIFICATIONS OF THE OHIO RAINWATER AND LAND DEVELOPMENT HANDBOOK (1996).
6. EROSION CONTROL BLANKETS WITH MATTING WILL BE USED ON DITCHES THAT ARE OVER 1.5% GRADE, AND ALL OTHER SLOPES GREATER THAN 6% GRADE.
7. SEDIMENT PONDS/TRAPS AND PERIMETER CONTROL SHALL BE IMPLEMENTED AS A FIRST STEP OF GRADING AND WITHIN 7 DAYS FROM THE START OF GRUBBING AND SHALL CONTINUE TO FUNCTION UNTIL UPLAND AREAS ARE STABILIZED.
8. TEMPORARY SEEDING OF ENTIRE SITE SHALL OCCUR BY NOVEMBER 1st, UNLESS THE SITE CAN BE FINAL SEED BY NOVEMBER 15th.
9. NO SOLID OR LIQUID WASTE SHALL BE DISCHARGED INTO STORM WATER RUN OFF.
10. OFF-SITE VEHICLE TRACKING SEDIMENT SHALL BE MINIMIZED. CONSTRUCTION VEHICLES ARE LIMITED TO THE CONSTRUCTION ACCESS ENTRANCE NOTED ON THE PLAN.
11. THIS PLAN IS IN CONFORMANCE WITH LOCAL WASTE DISPOSAL, SANITARY AND HEALTH REGULATIONS.
12. DUMPED ROCK CHANNEL PROTECTION TO BE PLACED AS PER PLAN.
13. REGULAR INSPECTION AND MAINTENANCE WILL BE PROVIDED FOR ALL EROSION AND SEDIMENT CONTROL PRACTICES. PERMANENT RECORDS OF MAINTENANCE AND INSPECTIONS MUST BE KEPT THROUGHOUT THE CONSTRUCTION PERIOD. INSPECTIONS MUST BE MADE A MINIMUM OF ONCE EVERY 7 DAYS AND IMMEDIATELY AFTER STORM EVENTS GREATER THAN 0.5 INCHES OF RAIN IN A 24 HOURS PERIOD. PROVIDE NAME OF INSPECTOR, MAJOR OBSERVATIONS, DATE OF INSPECTION AND CORRECTIVE MEASURES TAKEN.
14. DISTURBED AREAS WHICH WILL REMAIN UNWORKED FOR A PERIOD OF 21 DAYS OR MORE, SHALL BE STABILIZED WITH SEEDING AND MULCHING OR OTHER APPROPRIATE MEANS WITHIN 7 DAYS.
15. WINTERIZATION - ANY DISTURBED AREA THAT IS NOT GOING TO BE WORKED FOR 21 DAYS OR MORE MUST BE SEED AND MULCH BY NOVEMBER 1 OR MUST HAVE A DORMANT SEEDING OR MULCH COVER APPLIED BETWEEN NOVEMBER 1 AND MARCH 1.
16. ALL SEDIMENT WILL BE REMOVED FROM THE POND UPON COMPLETION OF CONSTRUCTION.
17. SILT FENCING TO BE USED ON EACH INDIVIDUAL LOT AT TIME OF CONSTRUCTION.
18. ALL SEDIMENT LADEN PUMPED WATER MUST PASS THROUGH A SEDIMENT BASIN, FILTER BAG, OR SUMP PIT PRIOR TO DISCHARGE.

SCALE: 1" = 50'

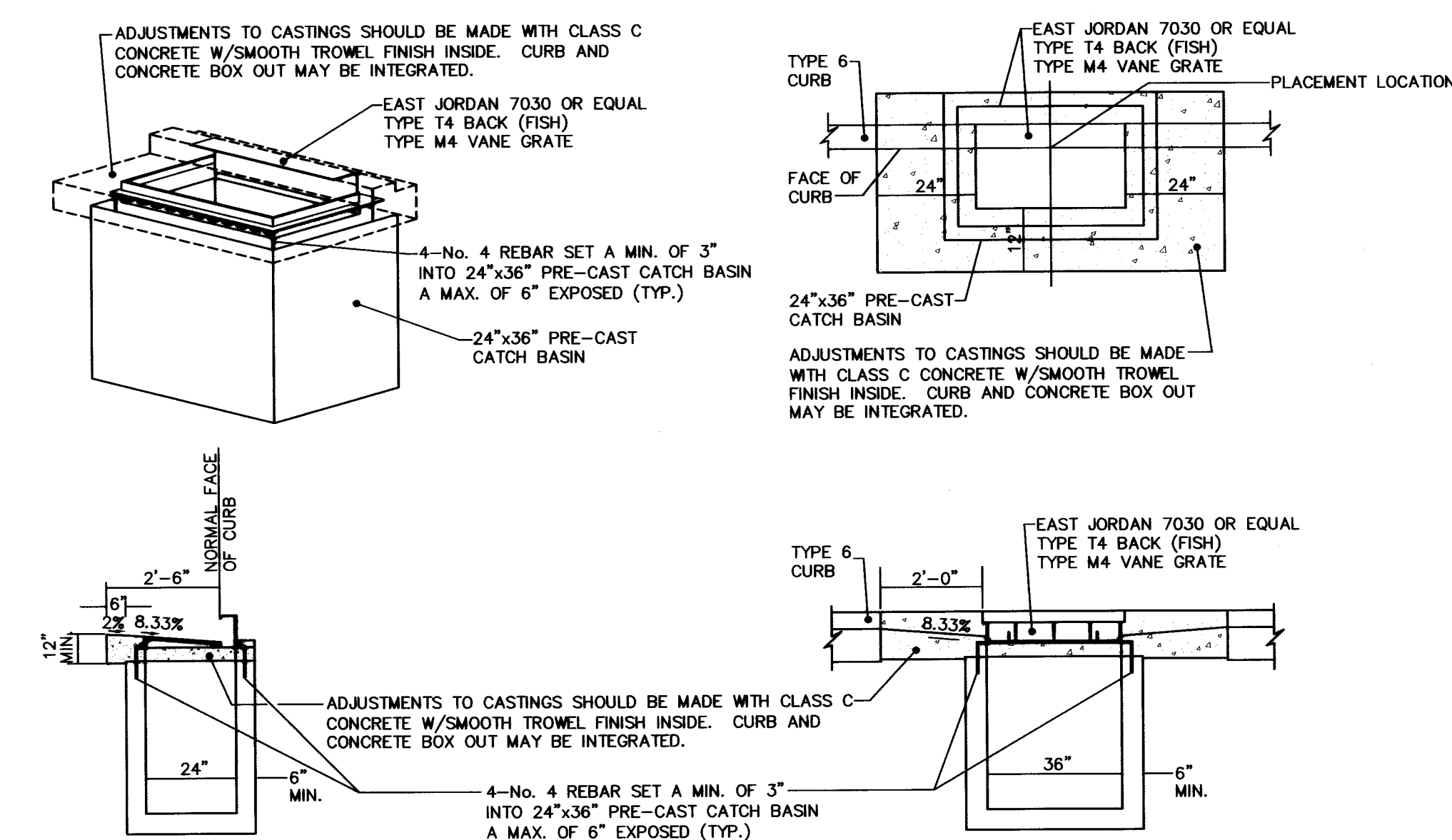


ACCEPTABLE EROSION CONTROL TIMETABLE

TEMP. SEEDING	J	F	M	A	M	J	J	A	S	O	N	D
PERM. SEEDING												
LANDSCAPING												
MULCHING												
MAINTENANCE												

LEGEND

- LIMITS OF CLEARING AND/OR GRADING
- SILT FENCE
- STONE CONSTRUCTION ENTRANCE
- INLET PROTECTION



ORCHARD HILL

CITY OF MASSILLON

DESIGN	SCALE	DATE
J.M.P.	1" = 50'	MAY, 2004

GENERAL PLAN AND DETAILS

Critical Area Planting – Temporary Seeding (TS)

STANDARD

Definition

The establishment of a temporary vegetative cover on disturbed areas by seeding with the appropriate rapid growing plants.

Purposes

- To reduce the erosion and sedimentation by stabilizing disturbed areas that will not be brought to final grade for a year or less.
- To reduce problems associated with mud or dust from bare soil surfaces during construction.
- To reduce sediment runoff to downstream areas and improve the visual resources of the construction area.

Conditions Where Practice Applies

On exposed soil surfaces where additional work (grading, etc.) is not scheduled for a period of three weeks to less than one year.

Planning Considerations

- Protect the area from excess runoff as necessary with diversions, terraces, or sediment basins.
- Evaluate the capabilities and limitations of the soil to be seeded. Special attention needs to be given to soil pH, texture, internal water movement, steepness, and stability in order to plan the appropriate treatment.
- Plant species should be selected on the basis of quick germination, growth, and time of year to be seeded.
- Fertilizer, lime, seedbed preparation, seed coverage, mulch, and irrigation should be used as necessary to promote quick plant growth.

SPECIFICATIONS

I. **Site Preparation**

- Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and anchoring.
- Install the needed erosion control practices prior to seeding such as diversions, temporary waterways for diversions outlets, and sediment basins.

II. **Seedbed Preparation**

- Lime (in lieu of a soil test recommendation) on acid soil (pH 5.5 or lower) and subsoil at a rate of 100 pounds per 1000 square feet or two tons per acre of agricultural ground limestone. For best results make a soil test.
- Fertilizer (in lieu of a soil test recommendation) shall be applied at a rate of 12–15 pounds per 1000 square feet or 500–600 pounds per acre of 10–10–10 or 12–12–12 analysis or equivalent.
- Work the lime and fertilizer into the soil with a disk harrow, springtooth harrow, or similar tools to a depth of two inches. On sloping areas the final operation shall be on the contour.

III. **Seeding**

A. **Species Selection 1/**

	Per 1000 Square Feet	Per Acre
March 1 to August 15th		
1. Oats or	3 lbs.	4 bu.
2. Perennial Ryegrass	1 lb.	40 lbs.
3. Tall Fescue	1 lb.	40 lbs.
August 16 to November 1 2/		
1. Rye or	3 lbs.	2 bu.
2. Wheat or	3 lbs.	2 bu.
3. Perennial Ryegrass	1 lb.	40 lbs.
4. Tall Fescue	1 lb.	40 lbs.

1/ Other seed species may be substituted; check with the local SCS office for recommendations.

2/ After November 1, use mulch only. See Standard and Specifications for Mulching.

B. Apply the seed uniformly with a cyclone seeder, drill, cultipacker seeder (slurry may include seed and fertilizer) preferably on a firm, moist seedbed. Seed wheat or rye no deeper than one inch. Seed ryegrass no deeper than one-fourth inch.

C. When feasible, except where a cultipacker type seeder is used, the seedbed should be firmed following seeding operations with a cultipacker, roller, or light drag. On sloping land seeding operations should be on the contour wherever possible.

IV. **Mulching**

- Mulch shall be applied to protect the soil and provide a better environment for plant growth.
- Mulch shall consist of small grain straw (preferably wheat or rye) and shall be applied at the rate of two tons per acre or 100 pounds (two to three bales) per 1000 square feet.
- Spread the mulch uniformly by hand or mechanically so the soil surface is covered.

D. **Mulch Anchoring Methods**

- Mechanical** – Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material into the soil.
- Asphalt Emulsion** – Apply at the rate of 160 gallons per acre into the mulch as it is being applied.
- Mulch Nettings** – Use according to the manufacturer's recommendations. Use in areas of water concentration to hold mulch in place.

V. **Irrigation**

If soil moisture is deficient, supply new seedlings with adequate water for plant growth until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Critical Area Planting – Permanent Seeding (PS)
– Dormant Seeding (DS)

STANDARD

Definition

The establishment of perennial vegetation on disturbed areas by planting seed.

Purposes

- To reduce the erosion and decrease sediment yield from disturbed areas.
- To permanently stabilize disturbed areas in a manner that is economical, adaptable to site conditions, and allows selection of the most appropriate plant materials.

Conditions Where Practice Applies

- Disturbed areas where permanent, long-lived vegetative cover is needed to stabilize the soil.
- Rough graded areas which will not be brought to final grade for several months or more.

Planning Considerations

- Protect the area from excess runoff as necessary with diversions, grassed waterways, terraces, or sediment basins.
- Evaluate the capabilities and limitations of the soil to be seeded. Special attention needs to be given to soil pH, texture, internal water movement, steepness, and stability in order to plan the appropriate treatment.
- Plant species should be selected on the basis of soil type, planned use of the area, and the amount or degree of maintenance that can be devoted to the area in the future.
- Fertilizer, lime, seedbed preparation, seed coverage, mulch, and irrigation should be used as necessary to promote quick plant growth.
- Vegetation cannot be expected to provide erosion control cover and prevent soil slippage on a soil that is not stable due to its structure, water movement, or excessive slope.

SPECIFICATIONS

I. **Site Preparation**

- Soil material should consist of at least 25 percent silt and clay to provide an adequate amount of moisture holding capacity. An excessive amount of porous sand will not consistently provide sufficient moisture for good growth regardless of other soil factors.
- Where compacted soils occur, they should be broken up sufficiently to create a favorable rooting depth of 6–8 inches.
- Stockpile topsoil to apply to sites that are otherwise unsuited for establishing vegetation.
- Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application and anchoring, and maintenance. After the grading operation, spread topsoil where needed.
- Install the needed erosion control practices such as diversions, grassed waterways, and sediment basins.

II. **Seedbed Preparation**

- Lime (in lieu of a soil test recommendation) on acid soil and subsoil, 100 pounds per 1000 square feet or two tons per acre of agricultural ground limestone. For best results make a soil test.
- Fertilizer (in lieu of a soil test recommendation) apply 25 pounds per 1000 square feet or 1000 pounds per acre of 10–10–10 or 12–12–12 analysis. For best results make a soil test.
- Work the lime and fertilizer into the soil with a disk harrow, springtooth harrow, or other suitable field equipment to a depth of three inches. On sloping land the final operation shall be on the contour.

III. **Seeding**

A. Select a species or mixture appropriate for the site.

1. Permanent Seeding

Kind of Seed 1/	Seeding Dates 2/	Per 1000 Sq. Ft.	Per Acre
a) Creeping Red Fescue, PLUS Domestic Ryegrass PLUS Kentucky Bluegrass	March–May, Aug.–Sept.	1/2 lb. 3/	20 lbs. 3/
b) Tall Fescue	March–May Aug.–Sept.	1 lb. 3/	40 lbs.
c) Dwarf (Turf-type) Fescue 4/		1 lb. 3/	40 lbs. 3/

2. Special Seedings – Steep Banks or Cuts

Kind of Seed 1/	Seeding Dates 2/	Per 1000 Sq. Ft.	Per Acre
a) Tall Fescue	March–May Aug.–Sept.	1 lb.	40 lbs.
b) Crownvetch PLUS Tall Fescue	March–May Aug.– ?	1/4 lb.	10 lbs.
		1/2 lb.	20 lbs.
c) Flatpea PLUS Tall Fescue	March–May August	1/2 lb.	20 lbs.
		1/2 lb.	20 lbs.

3. Waterways and Road Ditches

a) Tall Fescue	March–May Aug.–Sept.	1 lb.	40 lbs.

1/ Other seed species may be substituted for these mixtures. Check with local SCS office for recommendations.

2/ These seeding dates are ideal. With the use of mulch and irrigation, seedings could be made any time throughout the growing season.

3/ The seeding rates need to be increased two to three times if the mixture is to be used as a lawn.

4/ The dwarf or turf-type fescues are much shorter and have finer leaves than the tall fescues. It is much better suited for lawn-type areas than tall fescues.

B. Dormant Seedings.

Seedings should not be planted from October 1 through November 20th. During this period the seeds are likely to germinate, but probably will not be able to survive the winter.

The following methods may be used to make a "Dormant Seeding":

- From October 1 through November 20, prepare the seedbed, add the required amounts of lime and fertilizer, then mulch and anchor. After November 20, and before March 15, broadcast the selected seed mixture. Increase the seeding rates by 50 percent for this type of seeding.
- From November 20 through March 15, when soil conditions permit, prepare the seedbed, lime and fertilize, apply the selected seed mixture, and mulch and anchor. Increase the seeding rates by 50 percent for this type of seeding.

C. Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydro-seeder (slurry may include seed and fertilizer) on a firm, moist seedbed. Cover to a depth of 1/4 to 1/2-inch.

D. Where feasible, except when a cultipacker type seeder is used, the seedbed should be firmed following seeding operations with a cultipacker, roller, or light drag. On sloping land, seeding operations should be on the contour where feasible.

IV. **Mulching**

- Mulch shall be applied to protect the soil and provide a better environment for plant growth.
- Mulch shall consist of small grain straw (preferably wheat or rye) and shall be applied at the rate of two tons per acre or 100 pounds (two or three bales) per 1000 square feet.
- Spread the mulch uniformly by hand or mechanically so the soil surface is covered.

D. **Mulch Anchoring Methods**

- Mechanical** – Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material into the soil.
- Asphalt Emulsion** – Apply at a rate of 160 gallons per acre into the mulch as it is being applied.
- Mulch Nettings** – Use according to the manufacturer's recommendations. Use in areas of water concentration to hold mulch in place.

V. **Maintenance**

Maintenance is a vital factor in maintaining an adequate vegetative erosion control cover. See Table 1.

A. **Irrigation** – If soil moisture is deficient, supply new seedlings with adequate water for plant growth until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry and hot seasons, or on adverse sites.

B. **Repairs** – Inspect all seeded areas for failures and make necessary repairs, replacements, reseeds, and remulching within the planting season, if possible.

- If stand is inadequate, overseed, fertilize, using half of rates originally applied, and mulch.
- If stand is over 60 percent damaged, reestablish following original lime, fertilizer, seedbed preparation, seeding recommendations, and mulching recommendations.

TABLE 1
Maintenance Fertilization and Mowing for Permanent Seeding

Mixture	Formula	Fertilizer Rate		Time	Mowing
		Lbs./Ac.	Lbs./1000 Sq. Ft.		
Creeping Red Fescue Ryegrass Kentucky Bluegrass	10–10–10	500	12	Fall. Yearly or as needed.	Not closer than 3".
Tall Fescue	10–10–10	500	12	Fall. Yearly or as needed.	Not closer than 4".
Dwarf (Turf-Type) Fescue	10–10–10	500	12	Fall. Yearly or as needed.	Not closer than 2".
Flatpea and Crownvetch with Fescue	0–20–20	400	10	Spring. Yearly following establishment and every 4–7 years thereafter.	Do not mow.

Diversion (D)
(Temporary and Permanent)

Definition

An earth channel with supporting ridge on the lower side constructed across the slope.

Scope

This standard covers the installation of diversions on construction sites and urban developments.

It includes temporary diversions, interceptors and diversion dikes as well as permanent diversions and level spreaders. Temporary diversions usually have a life expectancy of one year or less and the failure hazard is low.

Purpose

The purpose of this practice may include:

- To divert storm runoff away from unprotected slopes to a stabilized outlet.
- To divert sediment-laden runoff from a disturbed area to a sediment basin.
- To shorten the flow length within a long sloping drainage area.

Conditions Where Practice Applies

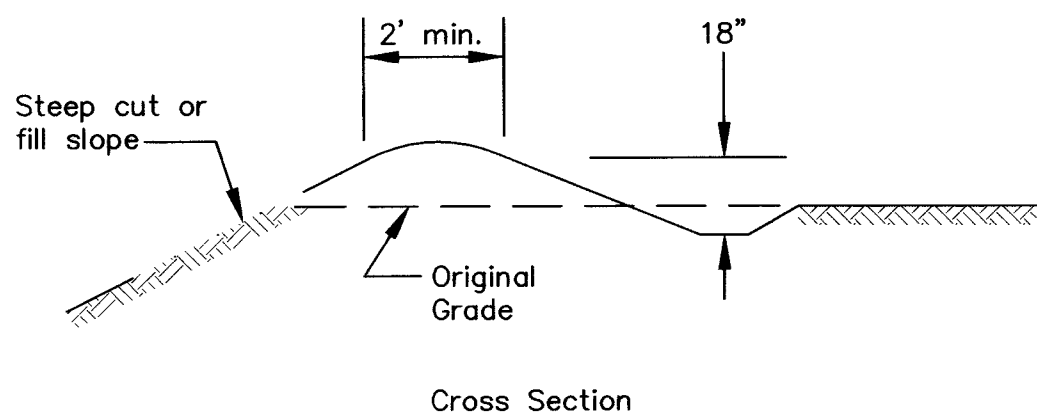
This practice applies to sites where runoff from higher lying areas is damaging (1) low lying areas, (2) cut or fill slopes or steeply sloping land, (3) critical sediment source areas in construction sites, (4) buildings and residences, and (5) active gullies or other erodible areas.

Diversions must have stable outlets. The site, slopes and soils must be such that the diversion can be maintained throughout its planned life.

Diversions are not recommended below high sediment producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels are installed with or before the diversions.

Diversion Dike Above Steep Slopes

Diversion dikes for the temporary protection of cut or fill slopes shall be installed in accordance with the following criteria for drainage areas of 5 acres or less. Larger areas require a diversion design.



Operation and Maintenance

The success or failure of a properly designed and constructed diversion depends on the adequacy of the outlet and proper maintenance.

Bare and vegetated diversion channels should be inspected regularly to check for points of scour or bank failure; rubbish or channel obstruction; rodent holes, breaching, or settling of the ridge; excessive wear from pedestrian or construction traffic. Repair damage and remove deposits or sediment from the diversion channel and vegetative filter strip. Reseeding and fertilizing should be done as needed.

Silt Fence (SF)

Definition

A temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts and entrenched. There are two types. The Silt Fence is a temporary linear filter barrier constructed of synthetic filter fabric, posts, and, depending upon the strength of the fabric used, wire fence for support. The Filter Barrier is constructed of stakes and burlap or synthetic filter fabric.

Purposes

1. To intercept and detain small amounts of sediment from disturbed areas during construction operations in order to prevent sediment from leaving the site.
2. To decrease the velocity of sheet flows and low-to-moderate level channel flows.

Conditions Where Practice Applies

1. Below disturbed areas where erosion would occur in the form of sheet and fill erosion.
2. Where the size of the drainage area is no more than 1/4 acre per 100 feet of silt fence length; the maximum slope length behind the barrier is 100 feet; and the maximum gradient behind the barrier is 50 percent (2:1).
3. In minor swales or ditch lines where the maximum contributing drainage area is no greater than 2 acres.
4. Under no circumstances should silt fences be constructed in live streams or in swales or ditch lines where flows are likely to exceed 1 cubic foot per second (cfs). See design Criteria for further clarification.

Planning Considerations

Laboratory work at the Virginia Highway and Transportation Research Council (VH & TRC) has shown that silt fences can trap a much higher percentage of suspended sediments than can straw bales. Silt fences may be preferable to straw barriers in many cases. While the failure rate of silt fences is lower than that of straw barriers, there have been instances in which silt fences were improperly installed. The installation methods outlined here can improve performance.

Filter barriers are inexpensive structures composed of burlap or standard weight synthetic filter fabric stapled to wooden stakes. Flow rates through burlap filter barriers are slightly slower and filtering efficiency is significantly higher than for straw bale barriers (see Table 1).

Table 1

FLOW RATES AND FILTERING EFFICIENCIES OF VARIOUS SEDIMENT FILTER MATERIALS

Material	Flow Rate (gal./sq.ft./min.)	Filter Efficiency (%)
Straw	5.6	67
Burlap (10 oz. fabric)	2.4	84
Synthetic Fabric	0.3 (Avg.)	97 (Avg.)

Source: Va. Highway and Transportation Research Council

Silt fences composed of a wire support fence and an attached synthetic filter fabric slow the flow rate significantly but have a higher filtering efficiency than burlap. Both woven and non-woven synthetic fabrics are commercially available. The woven fabrics generally display higher strength than the non-woven fabrics. When tested under acid and alkaline water conditions, most of the woven fabrics increase in strength. There is a variety of reactions among the non-woven fabrics. The same is true of testing under extensive ultraviolet radiation. Permeability rates vary regardless of fabric type. While all of the fabrics demonstrate very high filtering efficiencies for sandy sediments, there is considerable variation among both woven and non-woven fabrics when filtering the finer silt and clay particles.

Design Criteria

1. No formal design is required.
2. Filter barriers shall have an expected usable life of 3 months. They are applicable in ditch lines, around drop inlets, and at temporary locations where continuous construction changes the earth contour and runoff characteristics and where low or moderate flows (not exceeding 1 cfs) are expected.
3. Silt fences, because they have a much lower permeability than burlap filter barriers, have their applicability limited to situations in which only sheet or overland flows are expected. They normally cannot filter the volume of water generated by channel flows, and many of the fabrics do not have sufficient structural strength to support the weight of water ponded behind the fence line. Their expected usable life is 6 months.

Construction Specifications

The following construction specifications have been adapted from the Virginia Erosion and Sediment Control Handbook.

Materials

1. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

PHYSICAL PROPERTY	REQUIREMENTS
Filtering Efficiency	75% (min.)
Tensile Strength at 20% (max.) Elongation*	Extra Strength—50 lbs./lin.in. (min.) Standard Strength—30 lbs./lin.in. (min.)
Flow Rate	0.3 gal./sq.ft./min. (min.)

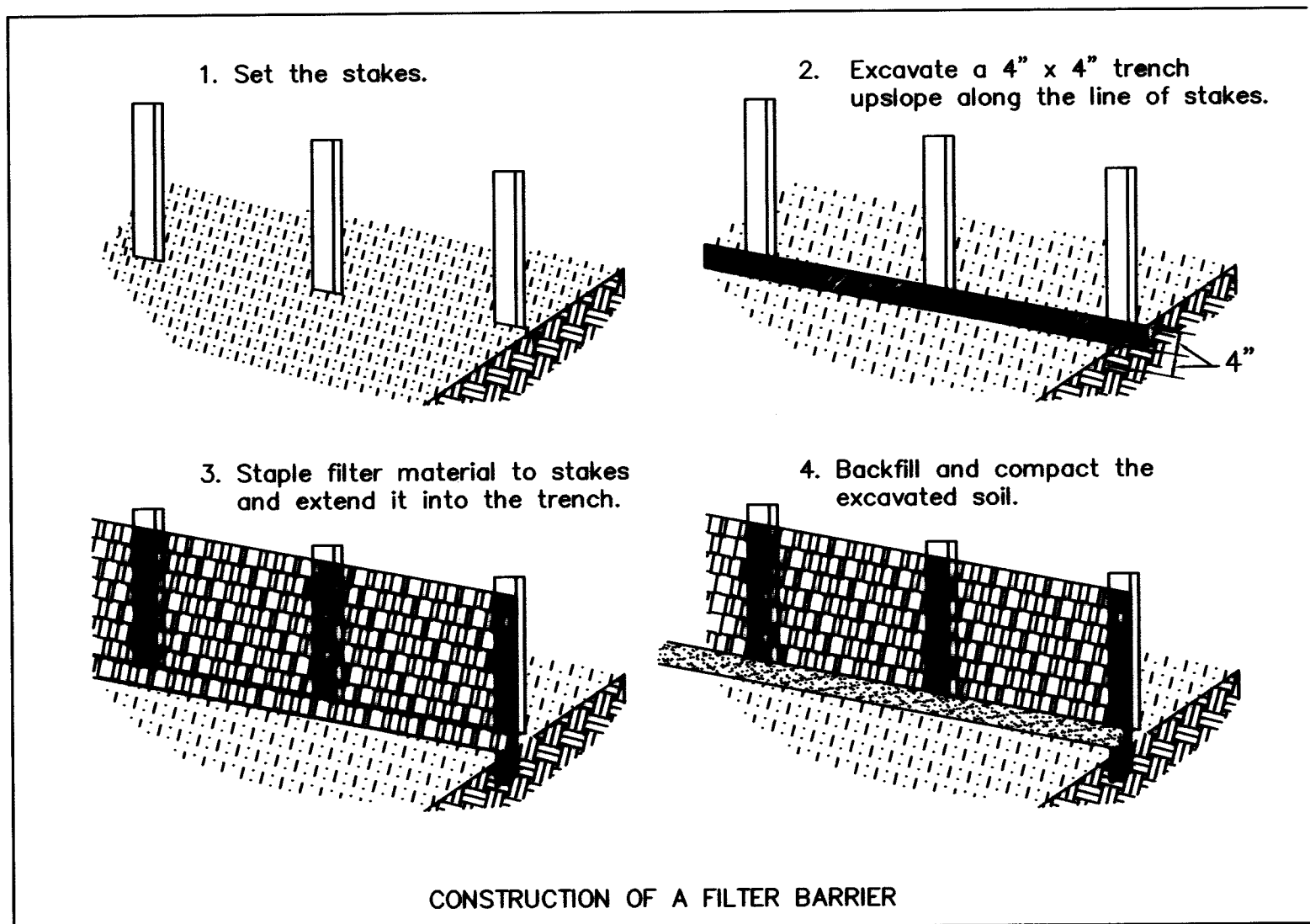
*Requirements reduced by 50 percent after 6 months of installation.

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0° F to 120° F.

2. Burlap shall be 10 ounces per square yard of fabric.
3. Posts for Silt Fences shall be either 4-inch diameter wood or 1.33 pounds per linear foot steel with a minimum length of 5 feet. Steel posts shall have projections for fastening wire to them.
4. Stakes for Filter Barriers shall be 1" x 2" wood (preferred) or equivalent metal with a minimum length of 3 feet.
5. Wire fence reinforcement for silt fences using standard strength filter cloth shall be a minimum of 42 inches in height, a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.

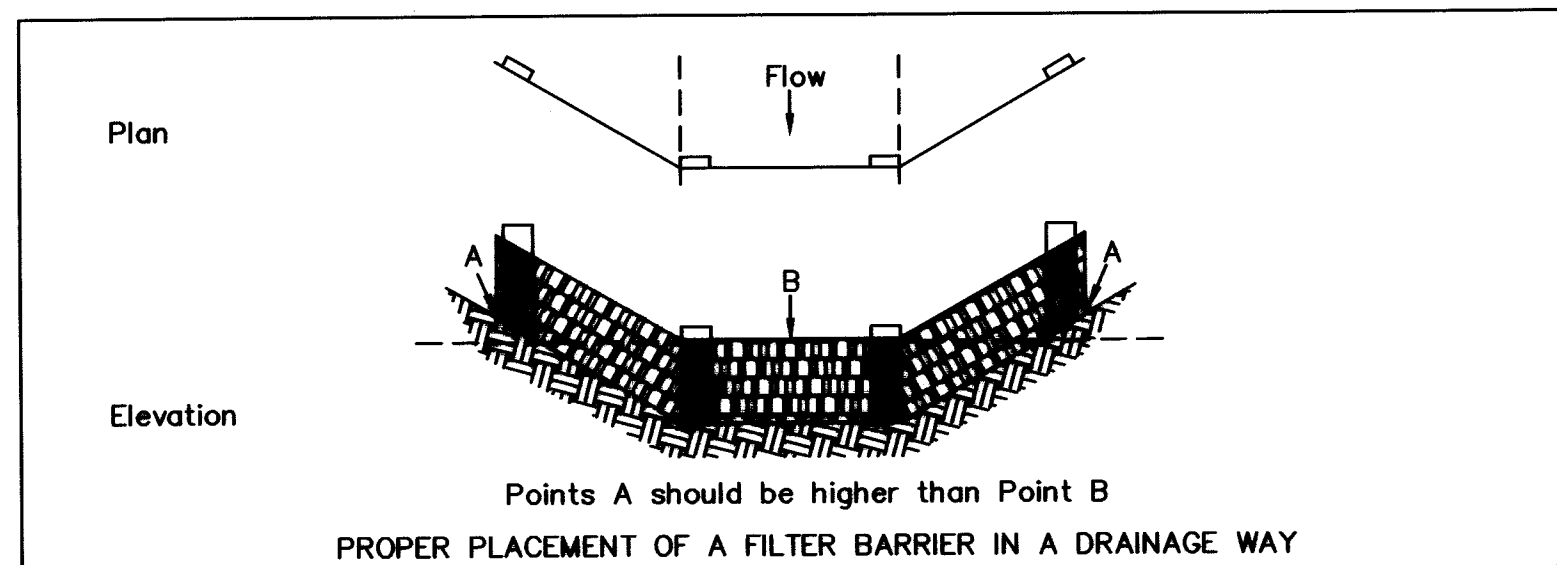
Filter Barrier: This sediment barrier may be constructed using burlap or standard strength synthetic filter fabric. It is designed for low or moderate flows not exceeding 1 cfs. See Figure 1.

1. The height of a filter barrier shall be a minimum of 15 inches and shall not exceed 18 inches.
2. Burlap or standard strength synthetic filter fabric shall be purchased in a continuous roll and cut to the length of the barrier to avoid the use of joints (and thus improve the strength and efficiency of the barrier).



Source: Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Figure 1



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

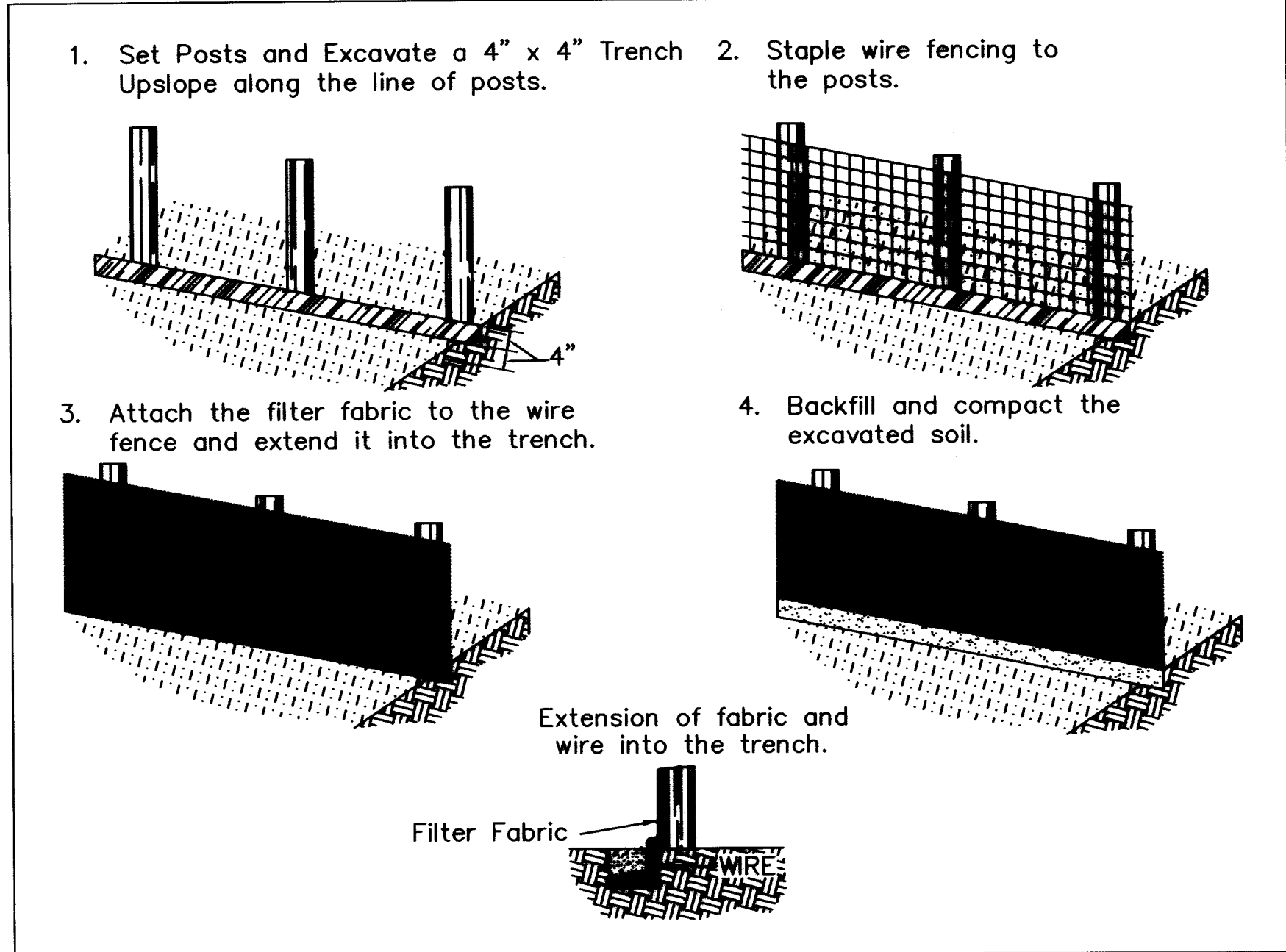
Figure 2

3. The stakes shall be spaced a maximum of 3 feet apart at the barrier location and driven securely into the ground (minimum of 8 inches).
4. A trench shall be excavated approximately 4 inches wide and 4 inches deep along the line of stakes and upslope from the barrier.
5. The filter material shall be stapled to the wooden stakes, and 8 inches of the fabric shall be extended into the trench. Heavy duty wire staples at least 1/2-inch long shall be used. Filter material shall not be stapled to existing trees.
6. The trench shall be backfilled and the soil compacted over the filter material.
7. If a filter barrier is to be constructed across a ditch line or swale, the barrier shall be of sufficient length to eliminate end flow, and the plan configuration shall resemble an arc or horseshoe with the ends oriented upslope (Figure 2).
8. Filter barriers shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

Silt Fence: This sediment barrier utilizes standard strength or extra strength synthetic filter fabrics. It is designed for situations in which only sheet or overland flows are expected. See Figure 3.

1. The height of a silt fence shall not exceed 36 inches (higher fences may impound volumes of water sufficient to cause failure of the structure).

2. The filter fabric shall be purchased in a continuous roll, cut to the length of the barrier to avoid the use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed.
3. Posts shall be spaced a maximum of 10 feet apart at the barrier location and driven securely into the ground (minimum of 12 inches). When extra strength fabric is used without the wire support fence, post spacing shall not exceed 6 feet.
4. A trench shall be excavated approximately 4 inches wide and 4 inches deep along the line of posts and upslope from the barrier.
5. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least 1 inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of 2 inches and shall not extend more than 36 inches above the original ground surface.



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Figure 3

6. The Standard Strength Filter fabric shall be stapled or wired to the fence, and 8 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
7. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of Item No. 6 applying.
8. The trench shall be backfilled and soil compacted over the filter fabric.
9. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

Maintenance

1. Silt fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.
2. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.
3. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.
4. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required, shall be dressed to conform with the existing grade, prepared and seeded.

Storm Drain Inlet Protection (IP)

Definition

A sediment filter installed around a storm drain drop inlet or curb inlet to reduce sediment discharge.

Purpose

To prevent sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area.

Conditions Where Practice Applies

Where storm drain inlets are to be made operational before permanent stabilization of the disturbed drainage area. Different types of structures are applicable to different conditions.

Planning Considerations

Storm sewers which are made operational before their drainage area is stabilized can convey large amounts of sediment to natural drainageways. In case of extreme sediment loading, the storm sewer itself may clog and lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets.

This practice contains several types of inlet filters and traps which have different applications dependent upon site conditions and type of inlet. Other innovative techniques for accomplishing the same purpose are encouraged, but only after careful study of their effectiveness should they be installed.

Note that these various inlet protection devices are for drainage areas of less than one acre. Runoff from large disturbed areas should be routed through a SEDIMENT BASIN.

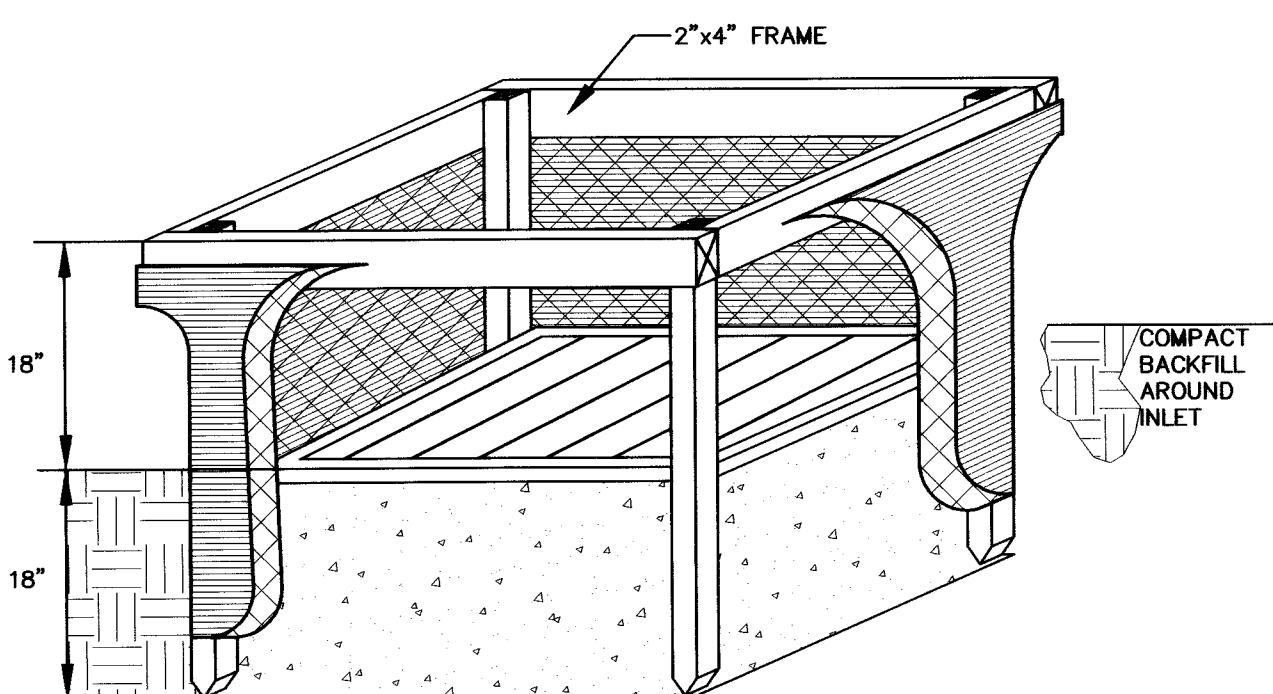
The best way to prevent sediment from entering the storm sewer system is to stabilize the site as quickly as possible, preventing erosion and stopping sediment at its source.

Design Criteria

1. The drainage area shall be no greater than 1 acre.
2. The inlet protection device shall be constructed in a manner that will facilitate cleanout and disposal of trapped sediment and minimize interference with construction activities.
3. The inlet protection devices shall be constructed in such a manner that any resultant ponding of stormwater will not cause excessive inconvenience or damage to adjacent areas or structures.
4. Design criteria more specific to each particular inlet protection device will be found with that construction specifications.

Construction Specifications

1. INLET PROTECTION IN SWALES, DITCH LINES OR YARD INLETS



1. Inlet protection shall be constructed either before upslope land disturbance begins or before the storm drains become operational.
2. The earth around the inlet shall be excavated completely to a depth of at least 18 inches.
3. The wooden frame shall be constructed of 2x4 inch construction-grade lumber. The 2x4 inch posts shall be driven 1 foot into the ground at four corners of the inlet and the top portion of the 2x4 lumber frame assembled using the overlap joint shown. The top of the frame shall be at least six (6) inches below adjacent roads if ponded water may pose a safety hazard to traffic.
4. Wire mesh shall be of sufficient strength to support fabric with water fully impounded against it. It shall be stretched tightly around the frame and fastened securely to it.
5. Geotextile fabric shall have an equivalent opening size of 20-40 sieve and be resistant to sunlight. It shall extend from the top of the frame to 18 inches below the inlet so the ends of the cloth are not fastened to the same post.
6. Backfill shall be placed around the inlet in compacted 6-inch layers until the earth is even with notch elevation on ends and top elevation on sides.
7. A compacted earth dike or a check dam shall be constructed in the ditch line below the inlet if the inlet is not in the depression and if runoff bypassing the inlet will not flow to a settling pond. The top of earth dikes shall be at least six (6) inches higher than the top of the frame.

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J.M.P.

SCALE
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MAY, 2004

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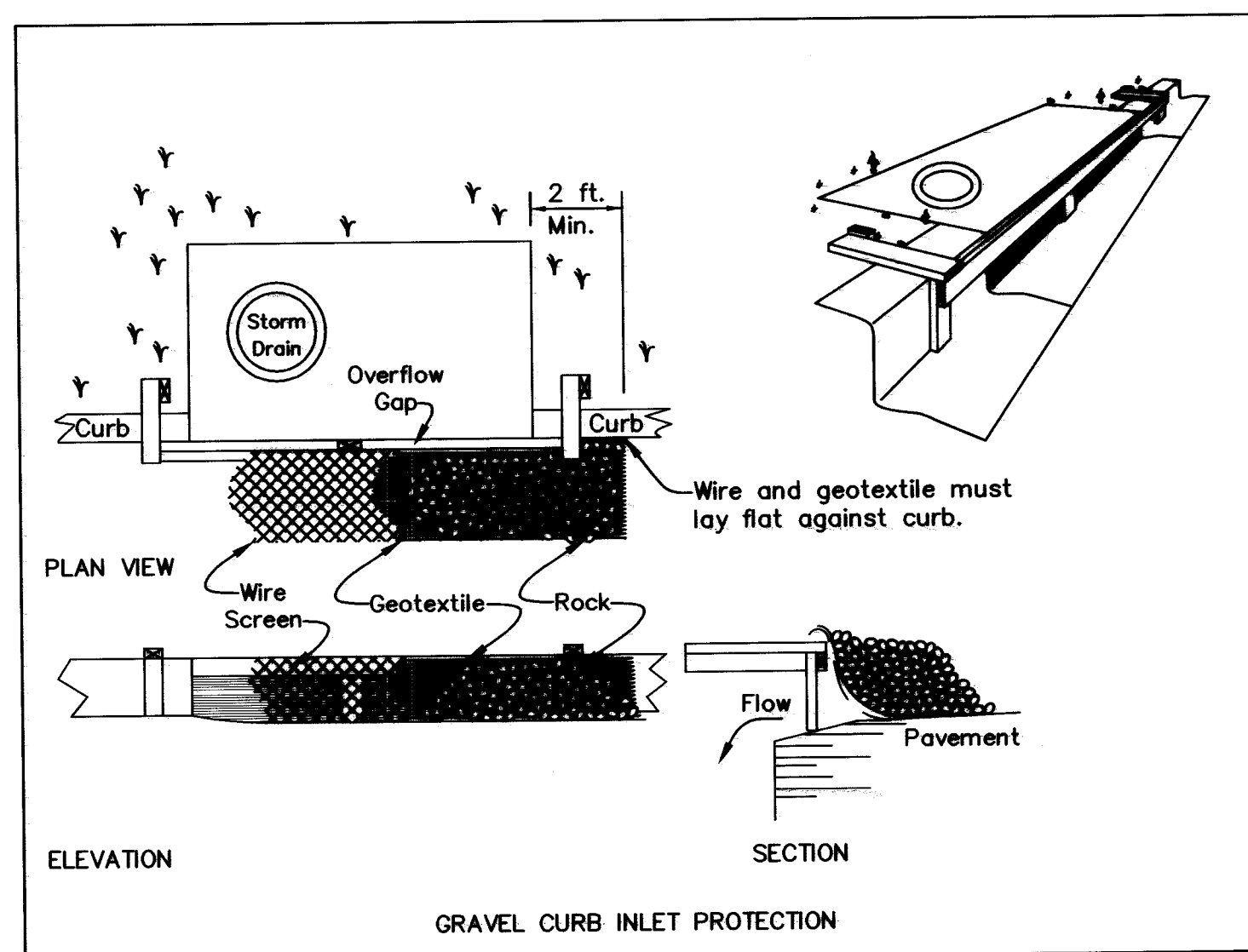
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STORMWATER POLLUTION PREVENTION PLAN

Construction Specifications

2. GRAVEL CURB INLET PROTECTION

- Inlet protection shall be constructed either before upslope land disturbance begins or before the storm drain becomes operational.
- The wooden frame is to be constructed of 2-by-4-in. construction-grade lumber. The end spacers shall be a minimum of 1 ft. beyond both ends of the throat opening. The anchors shall be nailed to 2-by-4-in. stakes driven on the opposite side of the curb.
- The wire mesh shall be of sufficient strength to support fabric and stone. It shall be a continuous piece with a minimum width of 30 in. and 4 ft. longer than the throat length of the inlet, 2 ft. on each side.
- Geotextile cloth shall have an equivalent opening size (EOS) of 20–40 sieve and be resistant to sunlight. It shall be at least the same size as the wire mesh.
- The wire mesh and geotextile cloth shall be formed to the concrete gutter and against the face of the curb on both sides of the inlet and securely fastened to the 2-by-4-in. frame.
- Two-inch stone shall be placed over the wire mesh and geotextile in such a manner as to prevent water from entering the inlet under or around the geotextile cloth.
- If the stone filter becomes clogged with sediment the stone must be pulled away from the geotextile cloth, cleaned and replaced.



MATting

Definition

Matting such as excelsior or jute is used to stabilize easily eroded areas such as channels and steep slopes while vegetation is becoming established.

Conditions Where Practice Applies

Matting should be used on:

- Channels where the designed flow exceeds 3.5 fps.
- Steep slopes.
- Problem areas that have highly erosive soils.
- Areas that may be slow to establish adequate vegetative cover.

Design Criteria

Materials

- Matting is available in many acceptable materials that provide excellent soil protection. Two acceptable materials are jute and excelsior matting. Excelsior matting is a wood fiber mulch covered with plastic netting on one or both sides. Jute matting is a woven cloth of jute yarn and may be used in conjunction with organic mulch. Both are widely available, easily installed, and adaptable to most site conditions.

Grade of Matting

- The specific grade of a matting should be specified. Matting is available in many different grades for a wide range of uses and site conditions.

Channel Width

- Channels often require several widths of mattings. The width of coverage should be specified for individual sections of the channel.

Manufacturers Instructions

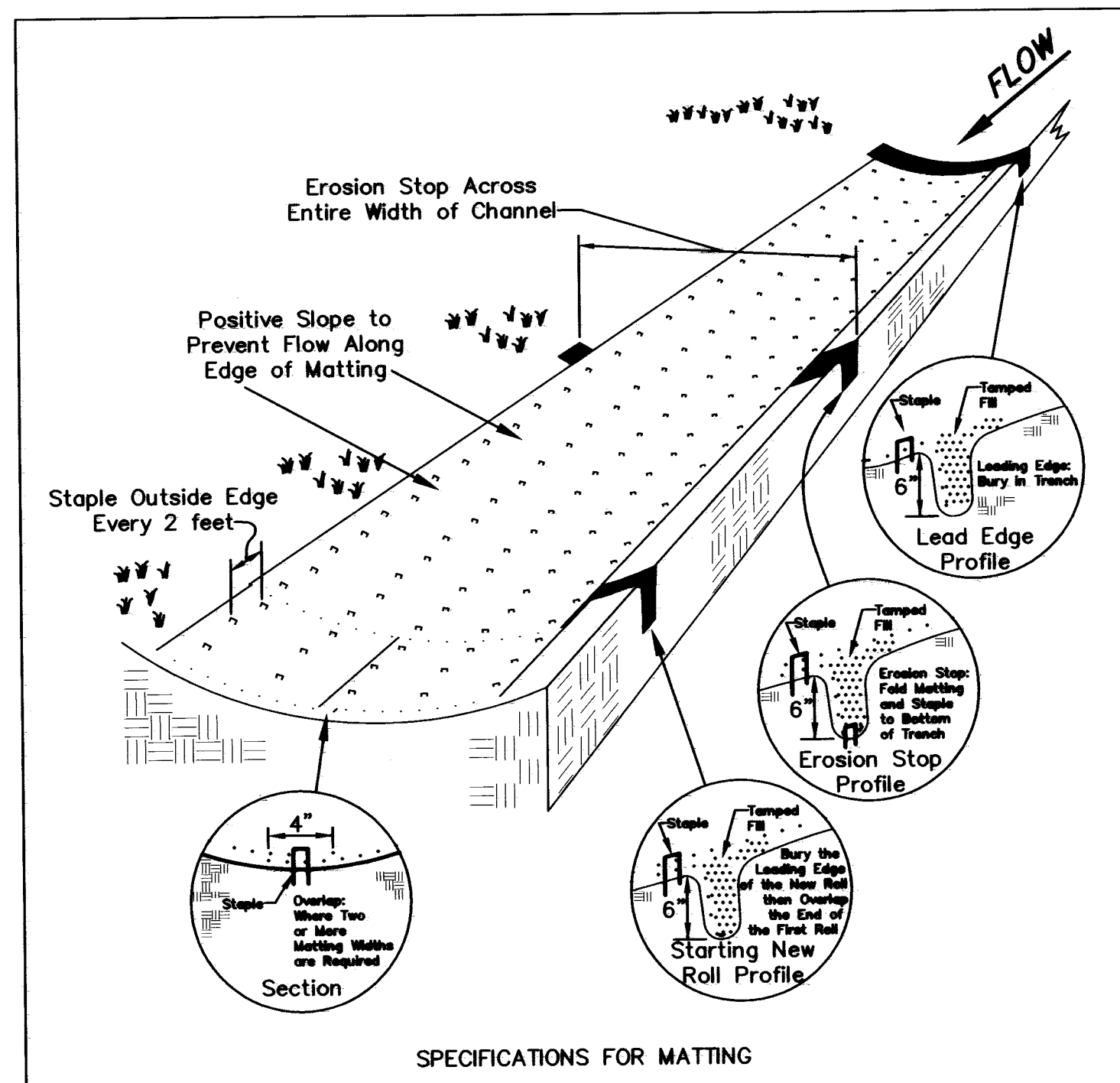
- Matting manufacturers usually provide detailed installation instructions for their products. The manufacturer's instructions should be referenced during design and included in the construction plans. If instructions are not available, the following guidelines listed in the specifications for matting may be used.

Erosion Stops

- Erosion stops are made of strips of matting placed in narrow trenches 6–12 in. deep across the full cross section of the channel. The strips are installed under the channel lining matting. Erosion stops prevent undermining and gullies from forming beneath the matting. They should be specified when recommended by the matting manufacturer and for areas of high-erosion potential such as where rocky conditions may prevent good soil matting contact, erosive soils or steep slopes. Depending on erosion potential, specifications should require erosion stops spaced from 20–100 ft. apart.

Construction Specifications

- Material—Excelsior matting shall be 48 in. wide and weigh an average of 0.75 lb./sq. yd. or greater. Jute matting shall be 48 in. wide and weigh an average of 1.2 lb./yd. or greater. Matting made of other material and providing equal or greater stabilization than the above may be substituted.
- Site Preparation—After the site has been shaped and graded, a seedbed shall be prepared that is relatively free of foreign material, clods or rocks that are greater than 1.5 in. in diameter. The site shall be prepared to ensure that the matting has good soil contact and the matting will not "bridge" or "tent" over obstructions.
- Matting shall be held in place as recommended by the manufacturer as adequate for the site conditions or with sod staples. Sod staples are U-shaped wire staples used for fastening sod, jute or excelsior matting and other erosion-control materials to the soil surface. Sod staples shall be No. 11 gauge or heavier and be 6–10 in. in length. In loose or sandy soils longer staples shall be used.
- Planting—Lime and fertilizer shall be used according to the recommendation of a soil test or the seeding plan. Seed according to the matting manufacturer's recommendations; or, for excelsior matting, seed area to be protected before installation; or, when using jute matting, apply half the seed before and half the seed after installation.
- Matting shall be installed as specified by the manufacturer as appropriate for the site conditions or the following procedure may be used:
 - After the site is prepared and erosion stops are installed, start laying the mat from the top of the slope or channel and unroll the matting allowing 4-in. overlaps at the edges.
 - Secure the matting by burying the top ends in a trench 6 in. deep and staple the folded ends to the bottom of the trench. Backfill and tamp firmly to the established grade.
 - Staple matting every 12 in. across the width beginning at the edges and every 2 ft. in rows the entire length of the matting. Every other row of staples running the length of the matting should be staggered.
 - To join two rolls together, cut a trench to anchor the end of the new roll and secure it the same as the top roll. Overlap the end of the previous roll 18 in. over the new roll. Continue to staple as described above.
 - When using excelsior matting, the plastic netting shall be on top of the wood fiber.
- Erosion stops shall be used where recommended by the matting manufacturer and on areas specified where high-erosion potential may cause undermining and gullies to form beneath the matting.
 - Erosion stops shall be made of strips of matting placed in narrow trenches 6–12 in. deep that cover the full cross section of the channel. They shall be spaced according to the manufacturer's recommendations or by the following:—3 ft. down the channel from each point of entry of concentrated flow,—at points where change in gradient or direction of channel occurs, and,—on long slopes at spacing from 20–100 ft. depending upon erodibility of the soil, velocity and volume of flow.
 - Erosion stops shall extend beyond the channel liner to the full design width of the channel, this will check any rills that might form outside or along the edge of the channel lining.
 - Erosion stops shall be constructed with 6 in. deep trench, stapled to the bottom of the trench, backfilled and tamped firmly to conform with the cross section of the channel.
 - If seeding has been done prior to installation of erosion stops, reseed disturbed areas prior to placement of channel liner.



SPECIFICATIONS FOR MATTING

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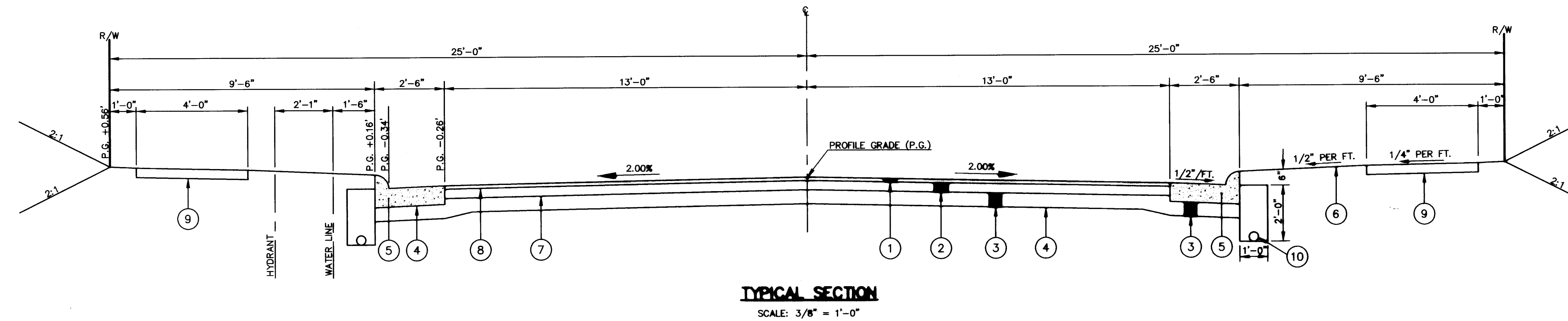
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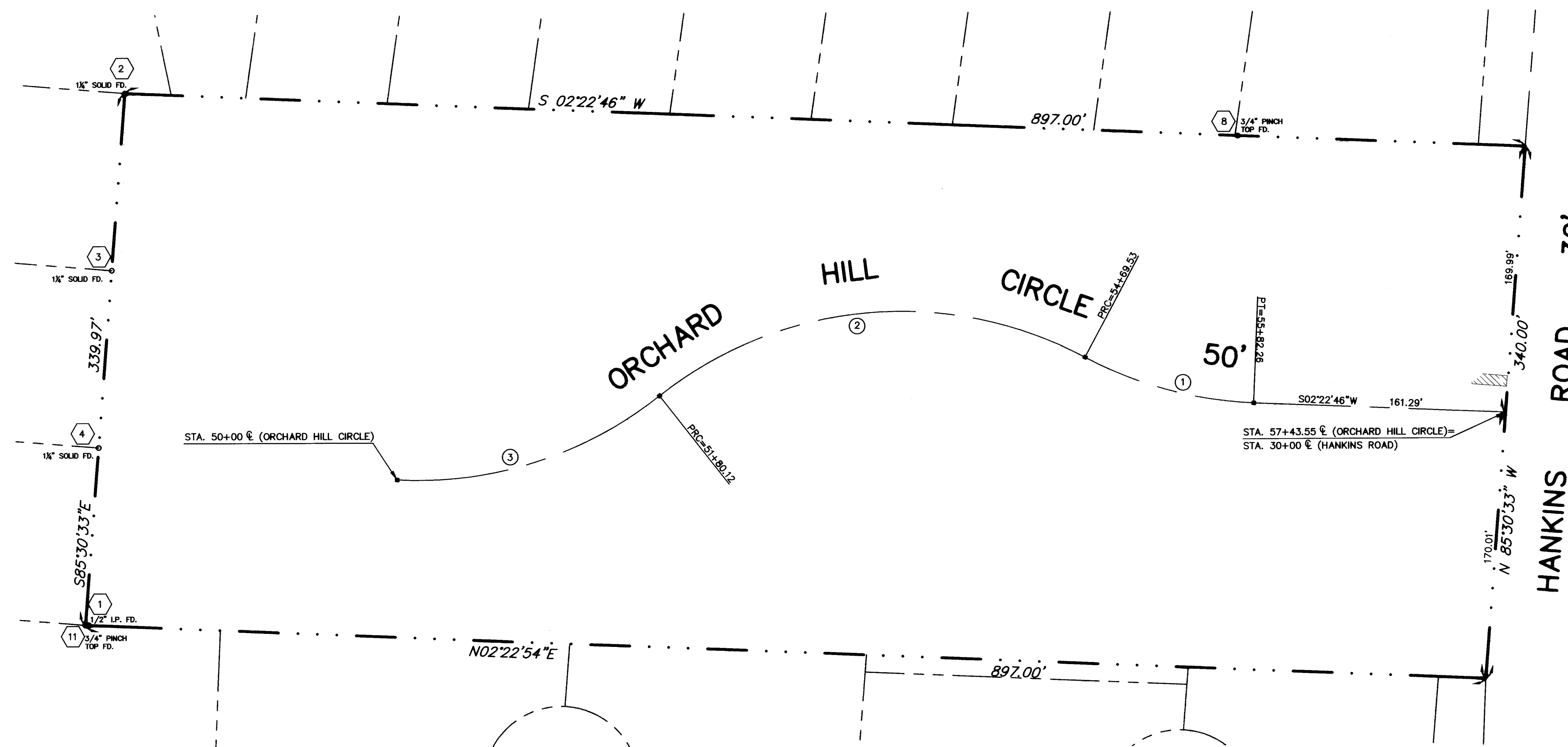
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REVISED: 8/03/04

STORMWATER POLLUTION PREVENTION PLAN



- LEGEND**
- ① ITEM 404 1-1/2" Asphalt Concrete
 - ② ITEM 301 4" Bituminous Aggregate Base
 - ③ ITEM 304 6" Aggregate Base (2-3" Lifts)
 - ④ ITEM 203.13 Compacted Subgrade
 - ⑤ ITEM 609 Massillon Standard Concrete Curb and Gutter
 - ⑥ ITEM 659 Seeding and Mulching
 - ⑦ ITEM 408 Prime Coat to be applied at the rate of 0.4 gal./sq. yd.
 - ⑧ ITEM 407 Tack Coat to be applied at the rate of 0.4 gal./sq. yd. (as required)
 - ⑨ ITEM 408 Concrete Walk (4" thickness, increase to 6" @ driveways)
Walk construction shall be the responsibility of the individual Homeowner.
 - ⑩ ITEM 605 4" Pipe Underdrain



CURVE DATA

①	②	③
Δ=25°50'12"	Δ=66°19'40"	Δ=41°16'50"
R=250.00'	R=250.00'	R=250.00'
T=57.34'	T=163.37'	T=94.17'
C=111.78'	C=273.52'	C=176.25'
L=112.73'	L=289.41'	L=180.12'
CB=N151°7'52"E	CB=S04°36'51"E	CB=N17°28'16"W

- = CURVE DATA
- ⬡ = COMPUTER NUMBERS
FILE: ORCHARD

ORCHARD HILL

CITY OF MASSILLON

DESIGN	SCALE	DATE
J.M.P.	AS NOTED	MAY, 2004

REVISED: 8/03/04

CENTERLINE SURVEY AND TYPICAL SECTION

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[illegible]

NOTE:
IF TOP STEP IS IN
24" DIA. OPENING,
IT MAY PROJECT NO
MORE THAN 3 1/2".

PRECAST MANHOLE SECTIONS SHALL
MEET ASTM C478. MANHOLE JOINTS
SHALL MEET ASTM C443.

SET CASTING IN 1/2" OF BITUMINOUS
SEAL PER D.D.B.T. 706.10

GRADE ADJUSTMENT

MIN. HEIGHT 6' - ANY COMBINATION
OF PRECAST RINGS AND/OR SEWER
MANHOLE BRICK.

MAX. HEIGHT 12' - ANY COMBINATION
OF PRECAST RINGS AND/OR SEWER
MANHOLE BRICK - BRICK COURSES
NOT TO EXCEED TWO.

APPLY 3/4" CEMENT MORTAR TO
INSIDE OF PRECAST RINGS AND/OR
MANHOLE BRICK. APPLY 1/2"
BITUMINOUS SEAL TO OUTSIDE OF
PRECAST RINGS AND/OR MANHOLE
BRICK.

24" DIA.

8" MIN.

8" MIN.

27" MIN.

ECCENTRIC
CONE
SECTION

6" TYP.

NOTE:
THIS DETAIL APPLIES FOR ECCENTRIC CONE SECTIONS
OR PRECAST FLAT SLAB TOP.

MANHOLE
GRADE ADJUSTMENT
DETAIL

NOT TO SCALE

Nominal thickness

Labels in the diagram include:

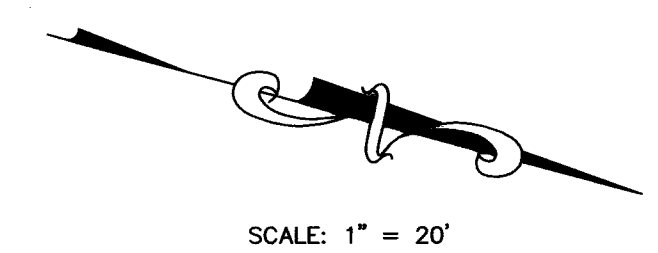
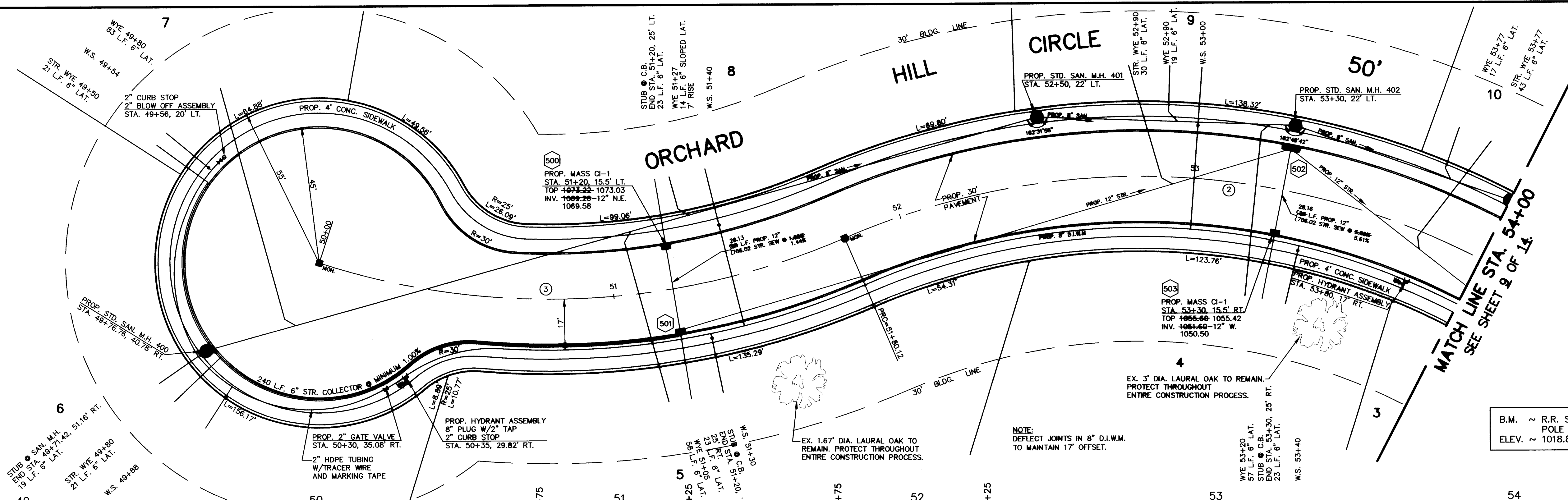
- Frame and cover
- Mortar
- Class C concrete
- Butt joint
- Step (Typ.)
- Wye
- 30" Cut curve
- 5" minimum encasement
- Drop
- Pipe
- 48" dia.
- O.D. + 2" min. opening
- 4:1
- Location of station and offset for manhole
- As per 706.13
- Lengths are multiples of step spacing
- 5" min.
- Opening + 5" min.
- 6" min.
- Class C concrete
- Brick or split pipe
- Formed concrete

STANDARD DROP MANHOLE

SECTION BELOW SPRING LINE

Showing method of turning side drain which enter the manhole at the flowline

F:\ORCHARD\DWG\PP-ORCHARD HILL-1 8/06/04



SCALE: 1" = 20'

② CURVE DATA

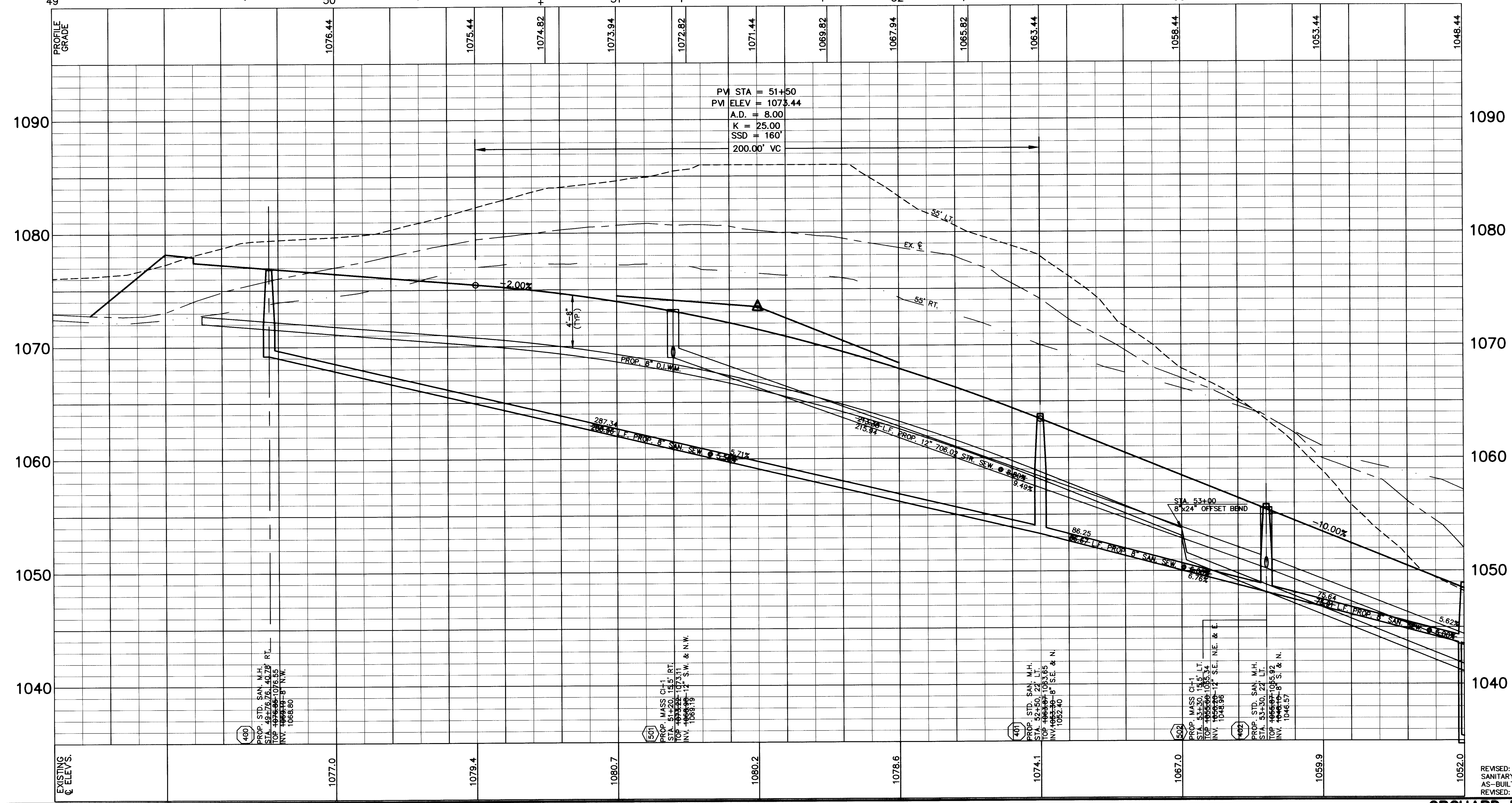
②	③
$\Delta=66^{\circ}19'40''$	$\Delta=41^{\circ}16'50''$
$R=250.00'$	$R=250.00'$
$T=163.37'$	$T=94.17'$
$C=273.52'$	$C=176.25'$
$L=289.41'$	$L=180.12'$
$CB=S04^{\circ}56'51''E$	$CB=N17^{\circ}28'16''W$

B.M. ~ R.R. SPIKE IN NORTH SIDE OF UTILITY POLE AT NORTHWEST CORNER OF PROPERTY ELEV. ~ 1018.84

NOTE:
DEFLECT JOINTS IN 8" D.I.W.M.
TO MAINTAIN 17' OFFSET.

EX. 1.67" DIA. LAURAL OAK TO REMAIN. PROTECT THROUGHOUT ENTIRE CONSTRUCTION PROCESS.

EX. 3" DIA. LAURAL OAK TO REMAIN. PROTECT THROUGHOUT ENTIRE CONSTRUCTION PROCESS.



ORCHARD HILL

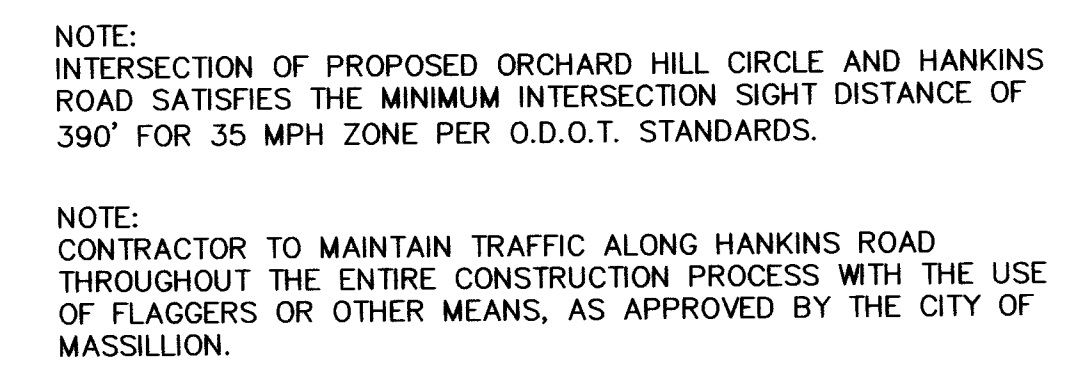
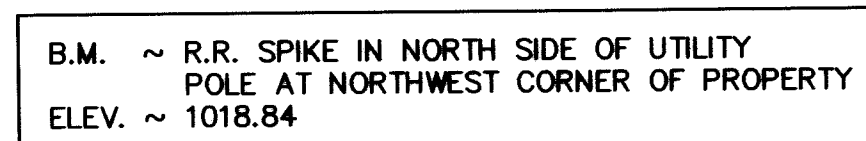
CITY OF MASSILLON

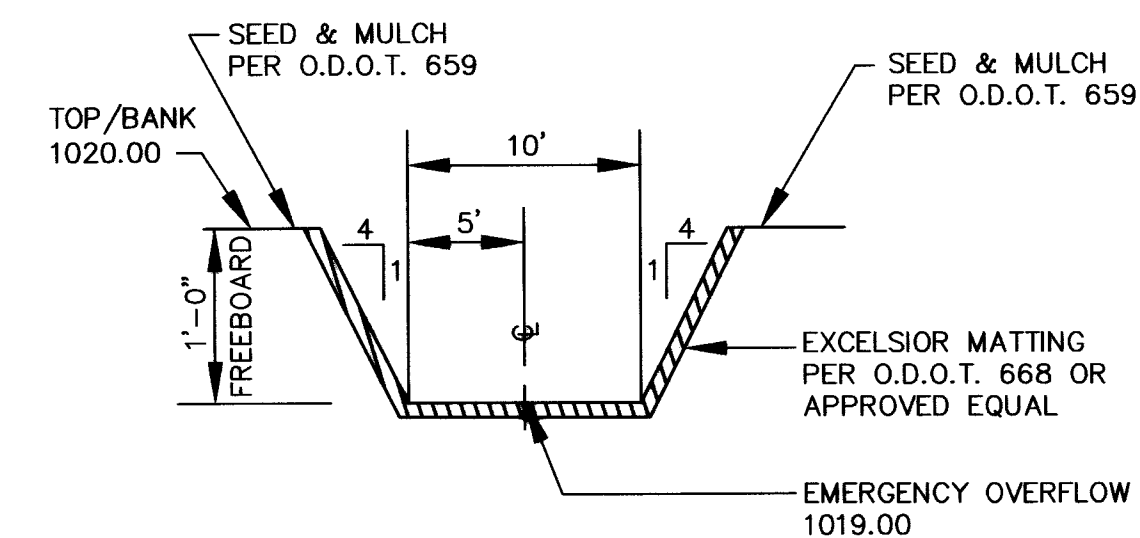
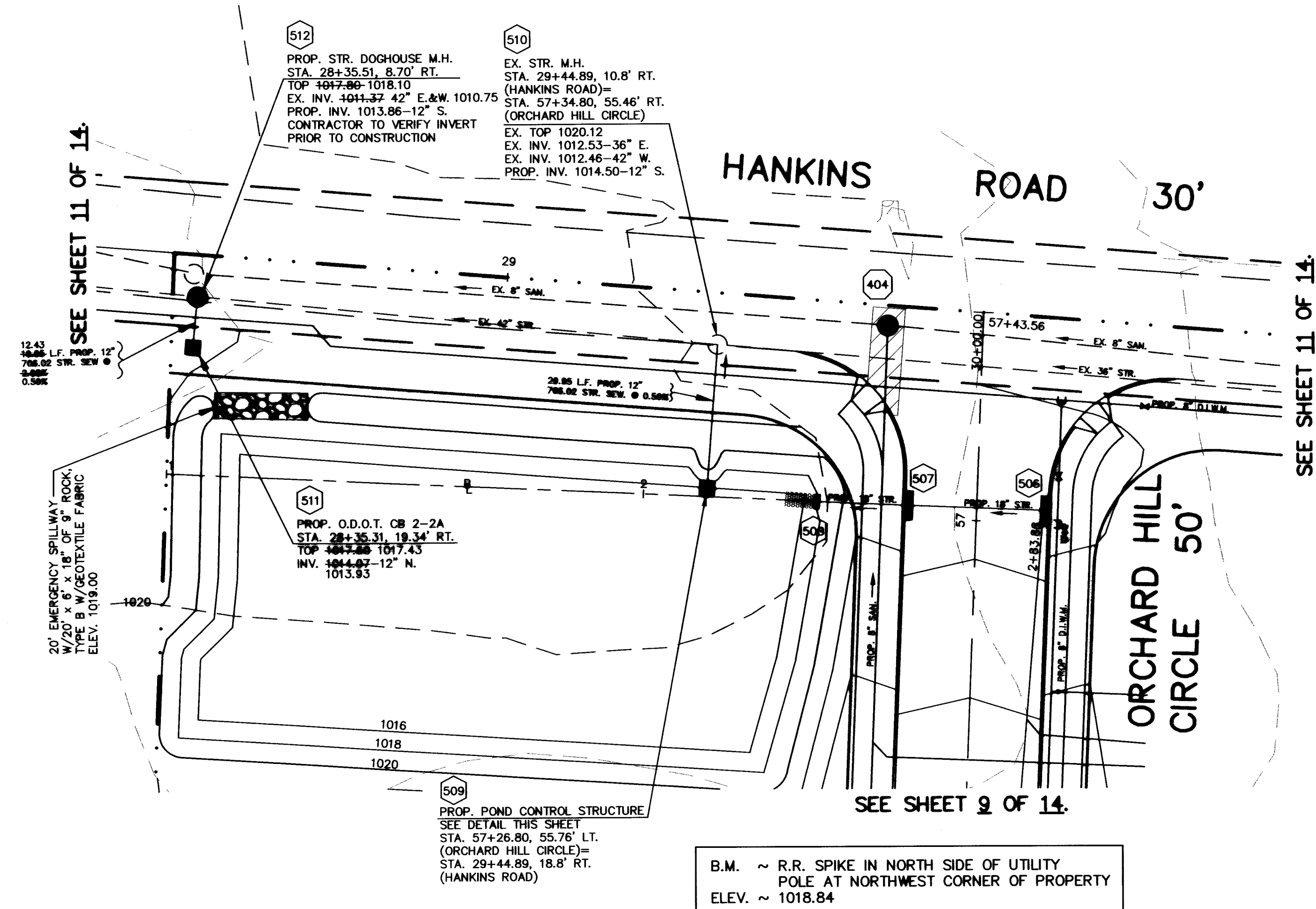
REVISED: 7/20/06
SANITARY & STORM
AS-BUILTS
REVISED: 8/10/04

DESIGN
J.M.P.

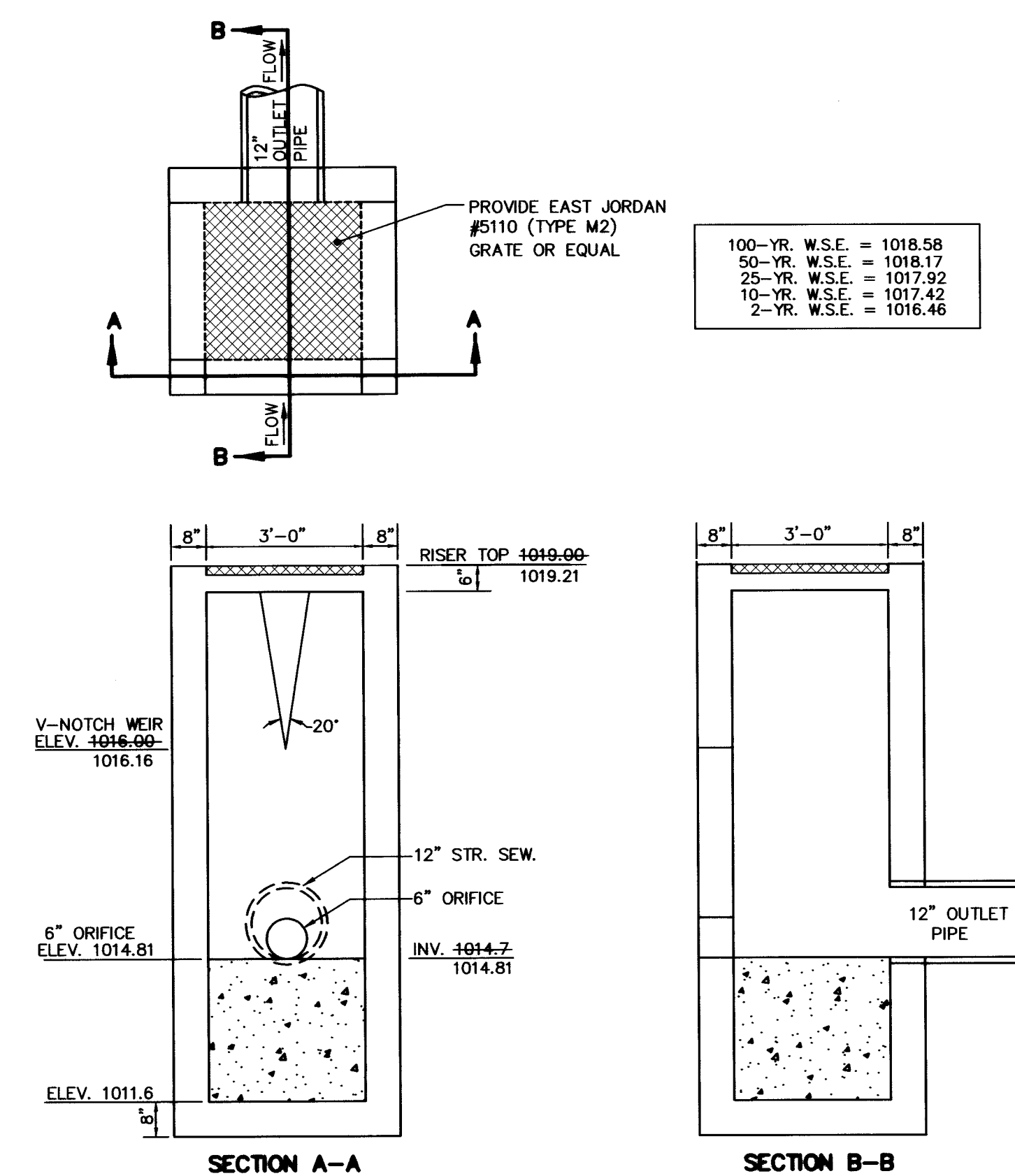
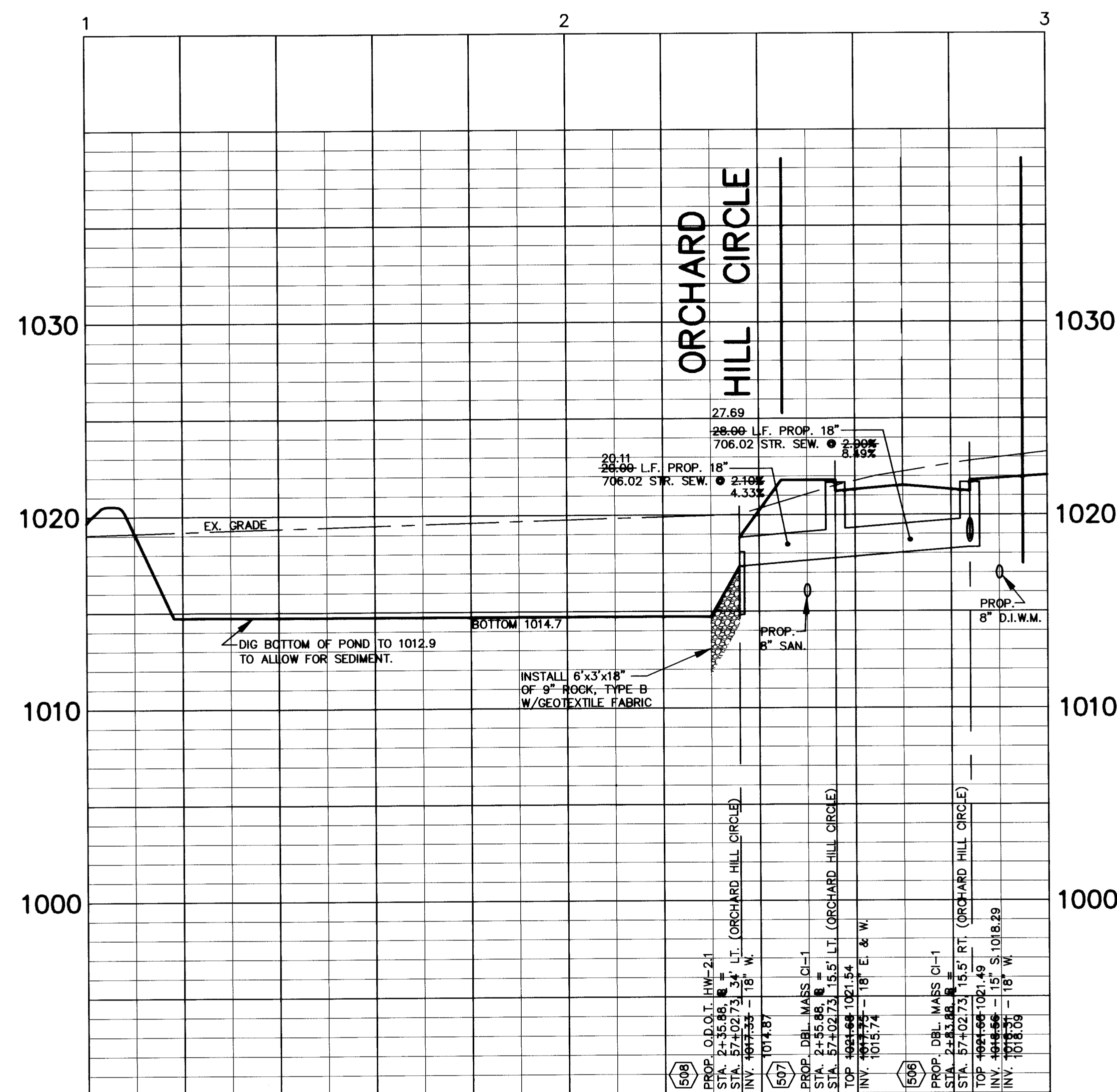
SCALE
H: 1"=20'
V: 1"=5'

DATE
MAY, 2004





EMERGENCY SPILLWAY DETAIL
NO SCALE



PROPOSED POND CONTROL STRUCTURE
O.D.O.T CB-2-3 (MODIFIED)
NO SCALE

ORCHARD HILL

CITY OF MASSILLON

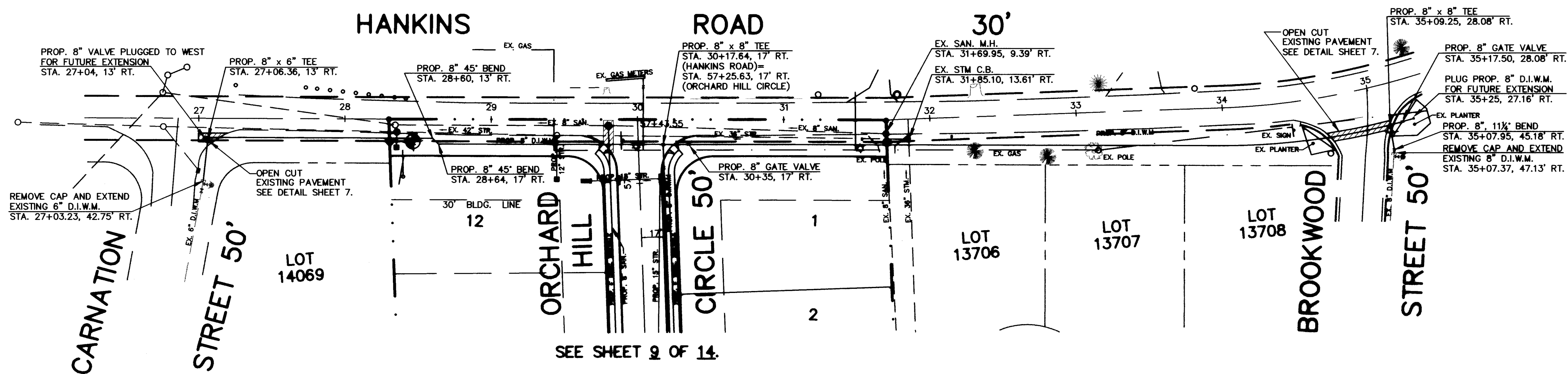
DESIGN
J.M.P.

SCALE
H: 1" = 20'
V: 1" = 5'

DATE
MAY, 2004

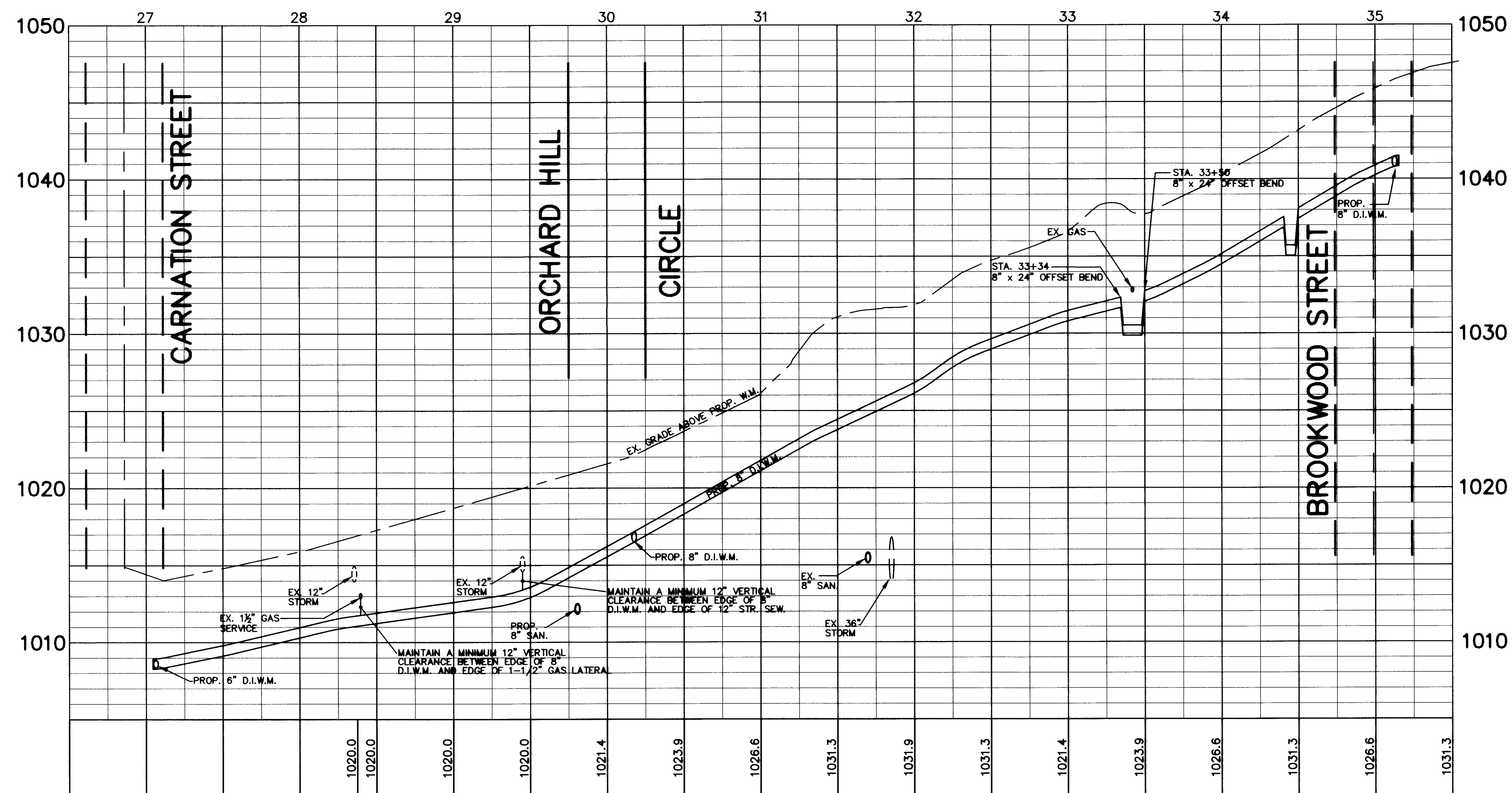
REVISED 7/21/06
SANITARY & STORM
AS-BUILTS
REVISED: 8/05/04

INTERSECTION DETAILS AND POND DETAIL



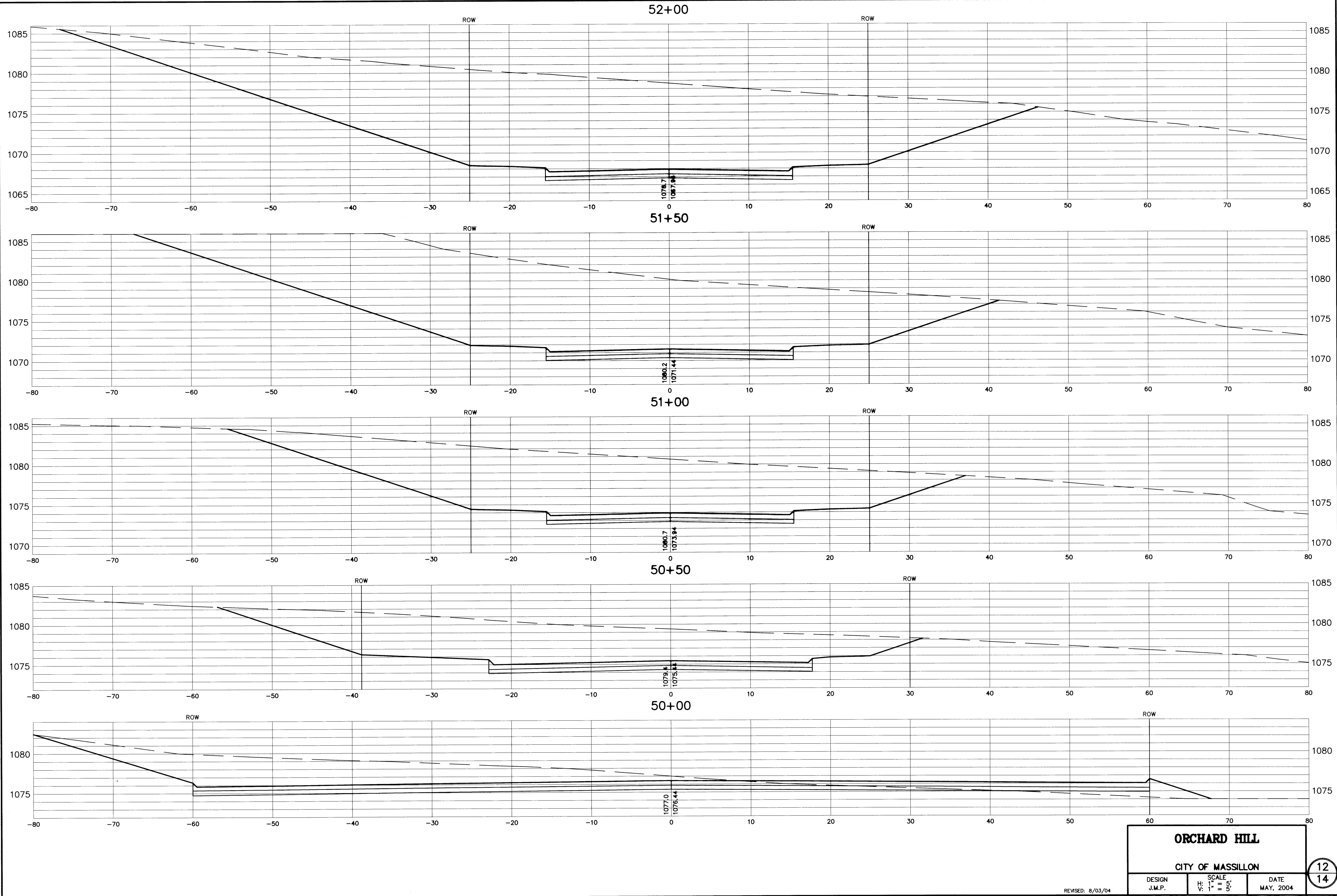
NOTE: CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION.

B.M. ~ R.R. SPIKE IN NORTH SIDE OF UTILITY POLE AT NORTHWEST CORNER OF PROPERTY
ELEV. ~ 1018.84



ORCHARD HILL		
CITY OF MASSILLON		
DESIGN J.M.P.	SCALE H: 1"=50' V: 1"= 5'	DATE MAY, 2004
REVISED: 06/18/04		11 14

WATER MAIN PROFILE



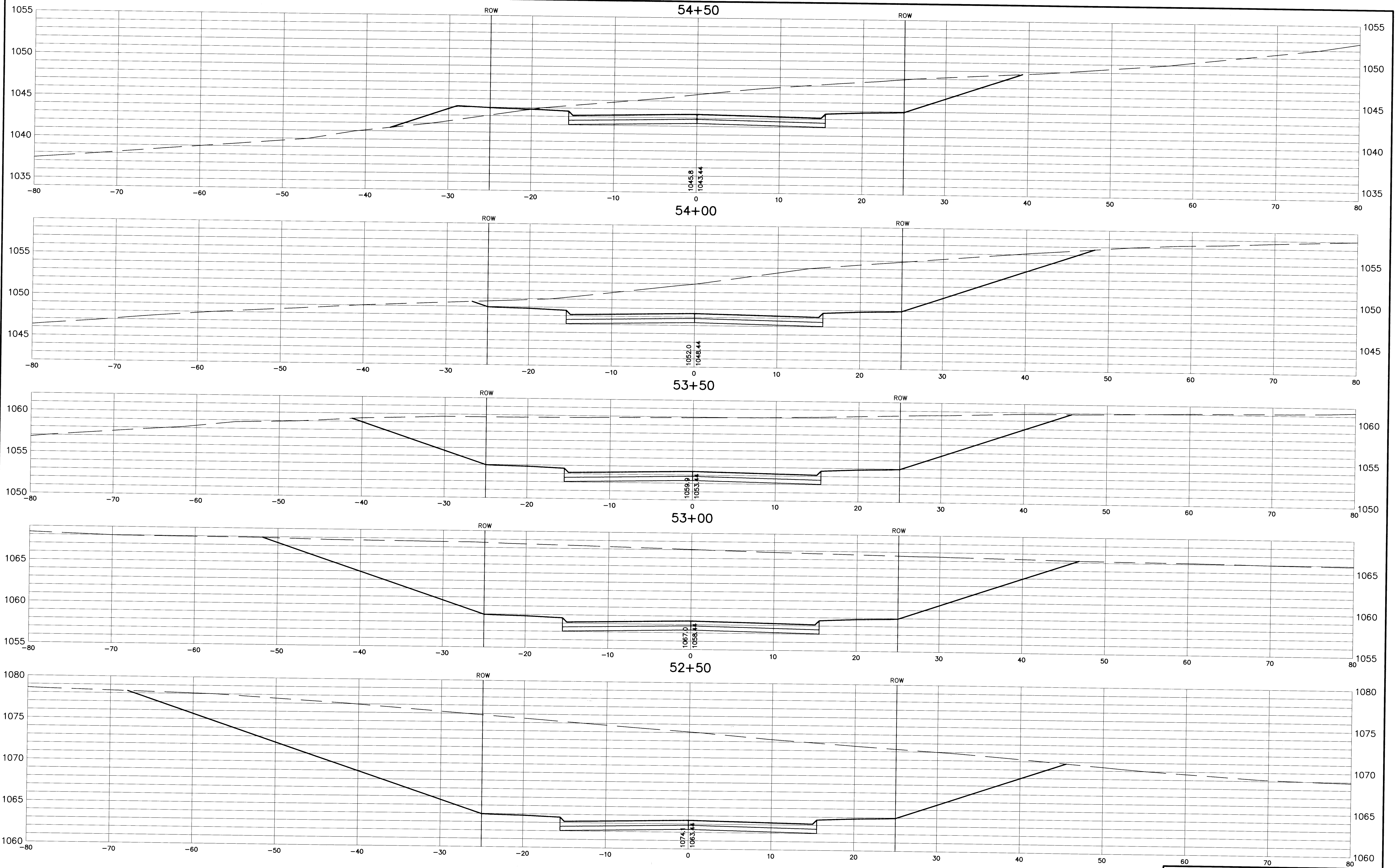
F:\ORCHARD\DWG\CROSS-OrchardHill-1 8/03/04

ORCHARD HILL		
CITY OF MASSILLON		
DESIGN J.M.P.	SCALE H: 1" = 5' V: 1" = 5'	DATE MAY, 2004

12
14

CROSS SECTIONS - ORCHARD HILL CIRCLE (STA. 50+00 TO STA. 52+00)

F:\ORCHARD\DWG\CROSS-OrchardHill-2 8/03/04



ORCHARD HILL

CITY OF MASSILLON

DESIGN
J.M.P.

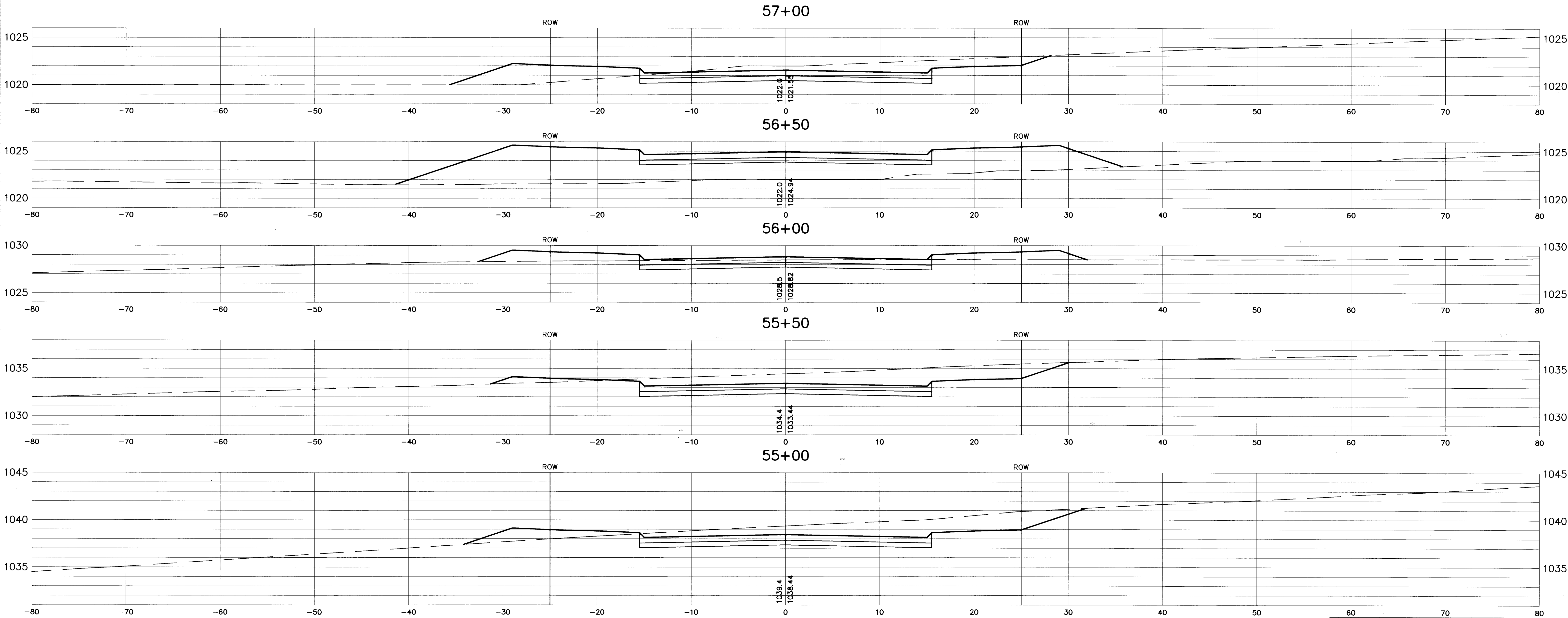
SCALE
H: 1" = 5'
V: 1" = 5'

DATE
MAY, 2004

13
14

CROSS SECTIONS - ORCHARD HILL CIRCLE (STA. 52+50 TO STA. 54+50)

STATION	AREAS		VOLUMES		CUMULATIVE VOLUMES	
	CUT	FILL	CUT	FILL	CUT	FILL
50+00	41.66	20.62	257.40	25.04	257.40	25.04
50+50	247.99	0.00	659.84	0.00	917.24	25.04
51+00	486.74	0.00	1125.68	0.00	2042.92	25.04
51+50	785.21	0.00	1506.50	0.00	3549.42	25.04
52+00	925.95	0.00	1741.37	0.00	5290.79	25.04
52+50	879.44	0.00	1426.89	0.00	6717.68	25.04
53+00	625.52	0.00	986.14	0.00	7703.82	25.04
53+50	438.60	0.00	620.37	0.00	8324.20	25.04
54+00	253.17	0.00	347.44	17.48	8671.64	42.52
54+50	142.89	14.28	191.91	28.74	8863.56	71.26
55+00	54.90	13.60	105.67	18.77	8969.23	90.03
55+50	54.79	4.50	51.62	39.95	9020.84	129.97
56+00	0.00	32.11	0.00	276.87	9020.84	406.85
56+50	0.00	207.11	24.58	272.88	9045.42	679.73
57+00	26.54	28.66	0.00	0.00	9045.42	679.73

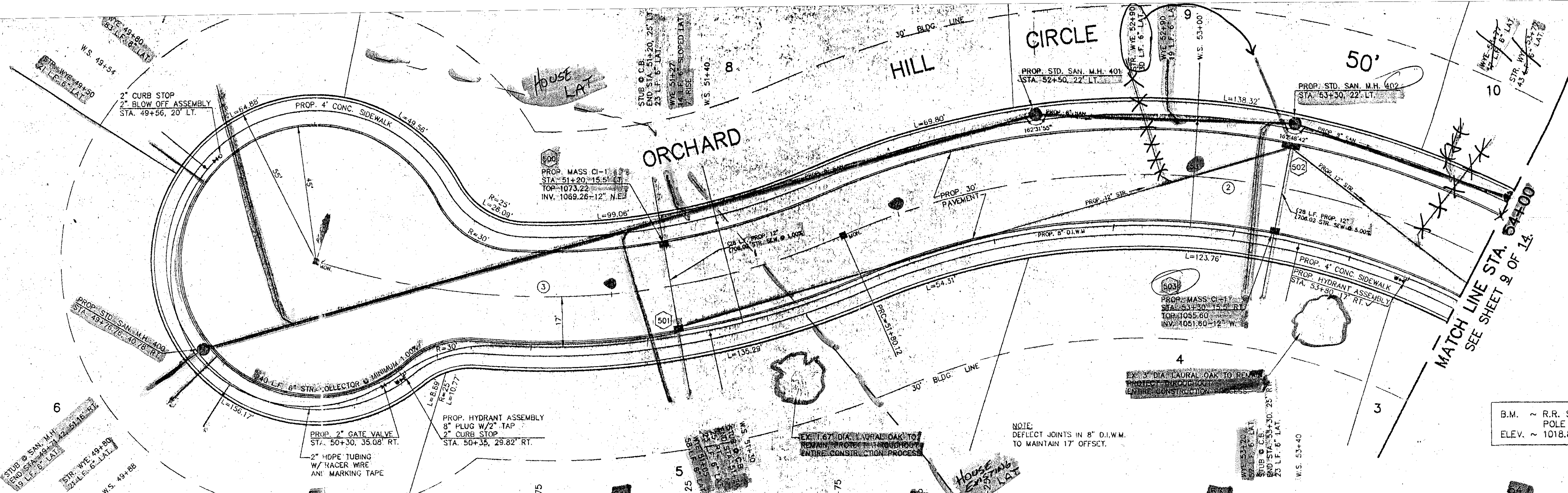


F:\ORCHARD.DWG CROSS-OrchardHill-3 8/03/04

ORCHARD HILL		
CITY OF MASSILLON		
DESIGN J.M.P.	SCALE H: 1" = 5' V: 1" = 5'	DATE MAY, 2004

14
14

CROSS SECTIONS - ORCHARD HILL CIRCLE (STA. 55+00 TO STA. 57+00)

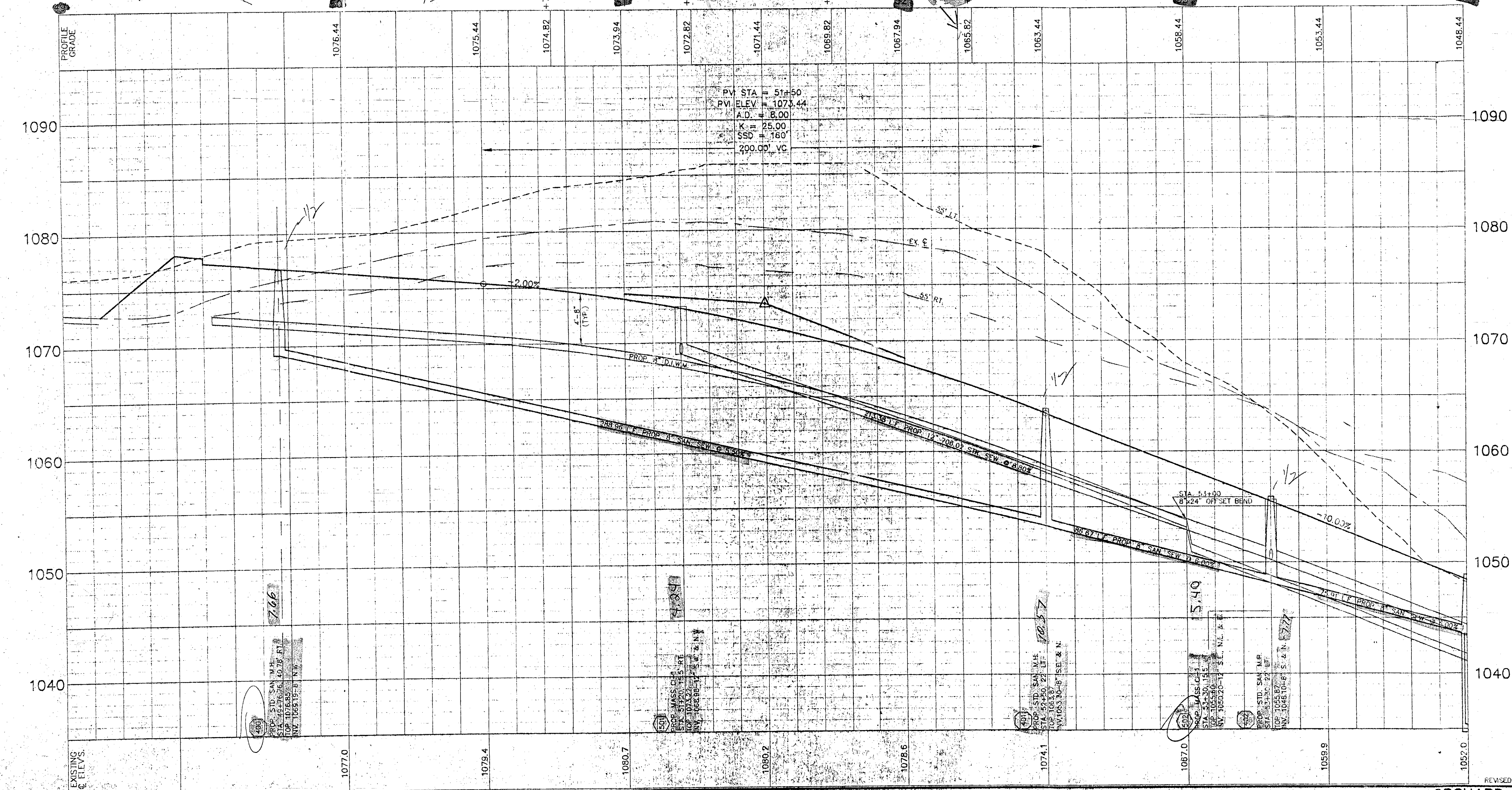


S. CURVE DATA

②	③
$\Delta = 66^{\circ}19'40''$	$\Delta = 41^{\circ}16'50''$
$R = 250.00'$	$R = 250.00'$
$T = 163.37'$	$T = 94.17'$
$C = 273.52'$	$C = 176.25'$
$L = 289.41'$	$L = 180.12'$
$CB = 504^{\circ}56'51''E$	$CB = N17^{\circ}28'16''W$

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ELEV. ~ 1018.84

NOTE:
DEFLECT JOINTS IN 8" D.I.W.M.
TO MAINTAIN 17" OFFSET.



ORCHARD HILL		
CITY OF MASSILLON		
DESIGN J.M.P.	SCALE H: 1" = 20' V: 1" = 5'	DATE MAY, 2004

ORCHARD HILL CIRCLE (STA. 50+00 TO STA. 54+00)

F:\PROJECTS\ORCHARD HILL-1 8/10/04

