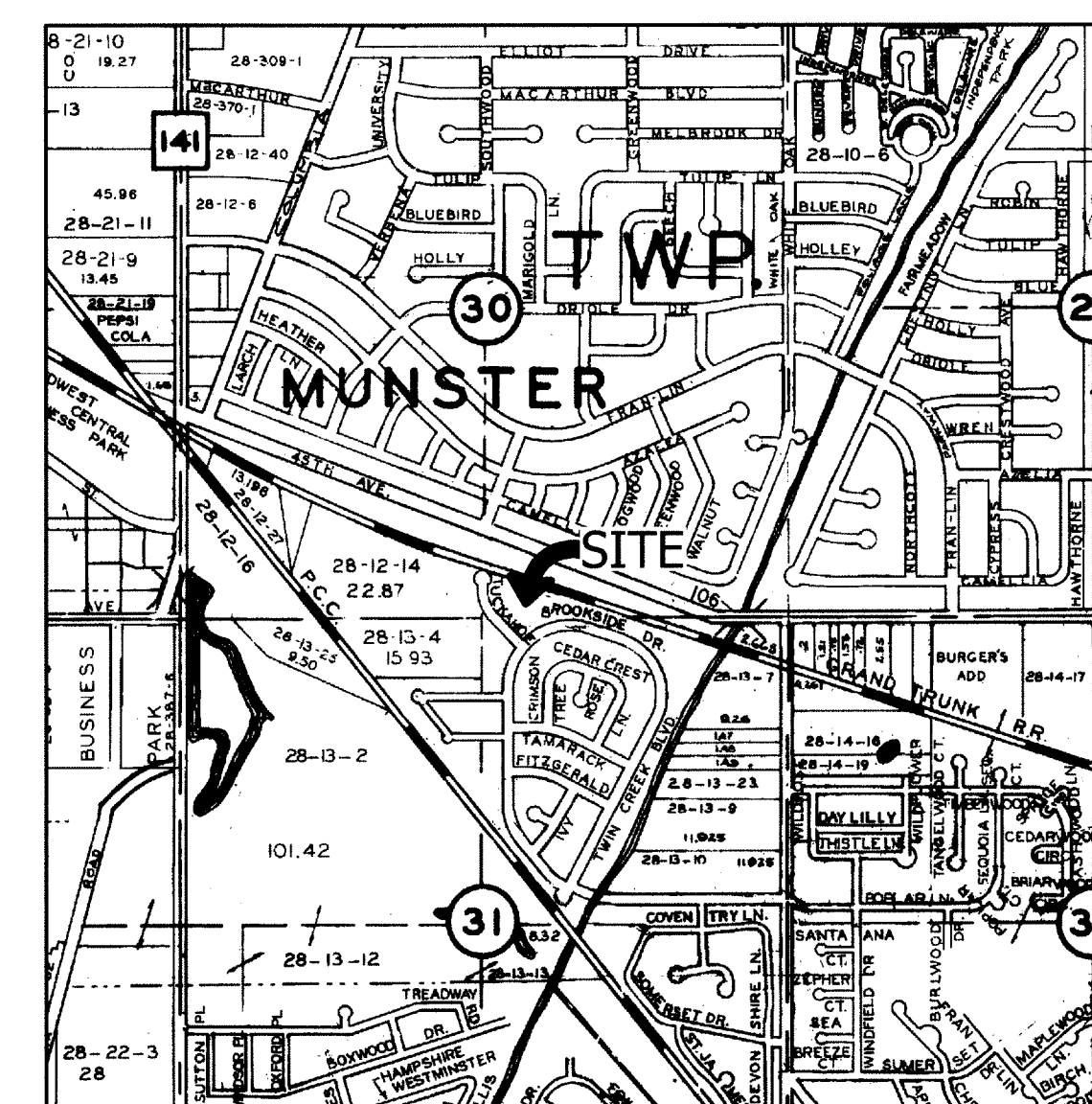


~ Tuckahoe Development ~

A PLANNED UNIT DEVELOPMENT TO THE TOWN OF
MUNSTER, LAKE COUNTY, INDIANA

INDEX	
PAGE	DESCRIPTION
COVER	TITLE PAGE
2	EXISTING CONDITIONS
3	SITE PLAN
4	MASTER UTILITY & DRAINAGE PLAN
5-6	DETAILS & SPECIFICATIONS
7	SOIL EROSION PLAN
8-9	SOIL EROSION DETAILS



VICINITY MAP

HOLEY MOLEY SAYS

"DIG SAFELY"



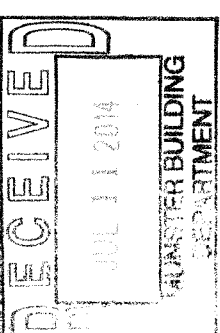
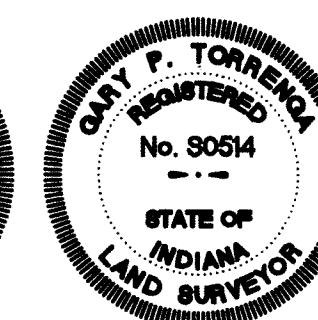
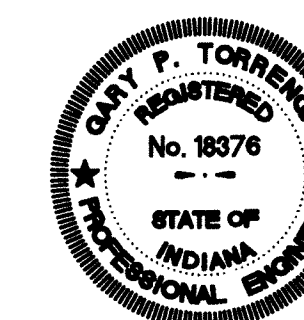
"IT'S THE LAW"
CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-382-5544
CALL TOLL FREE

PER INDIANA STATE LAW IC8-1-26,
IT IS AGAINST THE LAW TO EXCAVATE
WITHOUT NOTIFYING THE UNDERGROUND
LOCATION SERVICE TWO (2) WORKING
DAYS BEFORE COMMENCING WORK.

OWNER/DEVELOPER:
McFarland Homes
2300 Ramblewood Drive
Suite A
Highland, Indiana 46322

PREPARED BY:
Torrenga Engineering, Inc.
907 Ridge Road
Munster, Indiana 46321
(219)836-8918

CERTIFIED BY: GARY P. TORRENGA
P.E. # 18376
L.S. # S0514



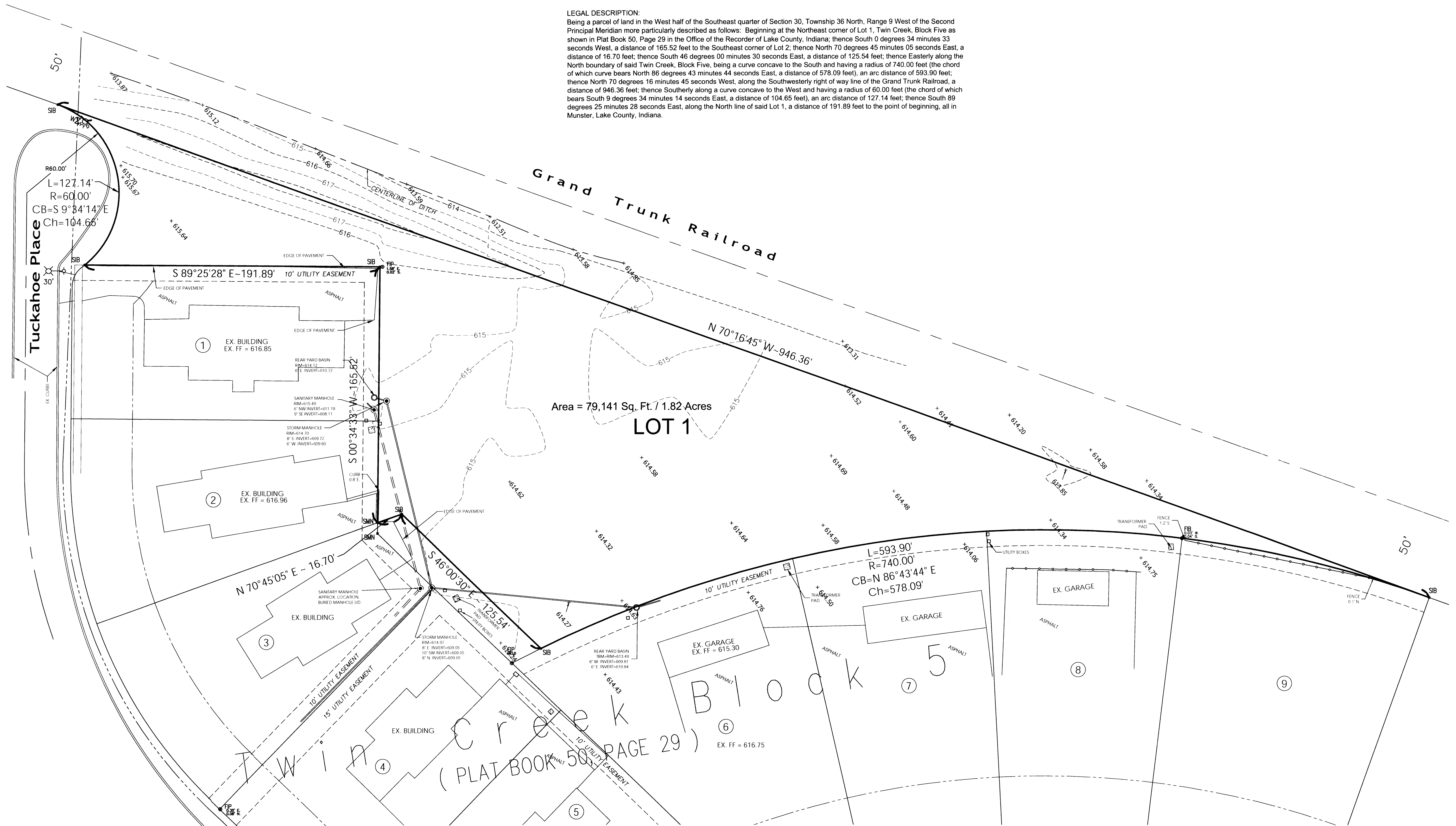
FILE NO: 217111.dwg CondoPlan11.dwg 5/12/2013 9:31:49 AM CDT

~ Tuckahoe Development ~

A PLANNED UNIT DEVELOPMENT TO THE TOWN OF MUNSTER, LAKE COUNTY, INDIANA

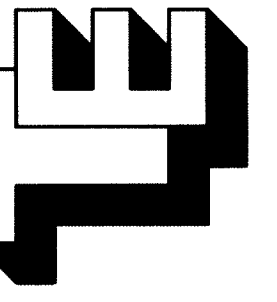
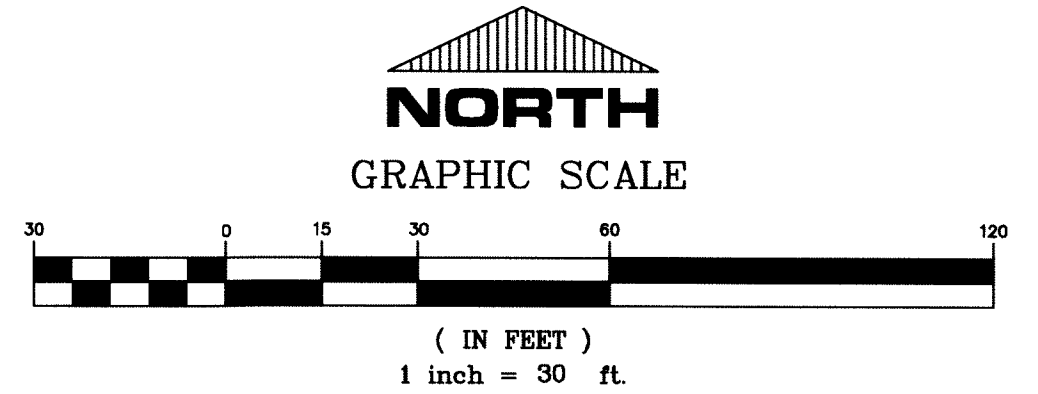
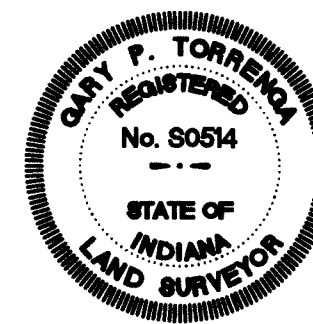
LEGAL DESCRIPTION:

Being a parcel of land in the West half of the Southeast quarter of Section 30, Township 36 North, Range 9 West of the Second Principal Meridian more particularly described as follows: Beginning at the Northeast corner of Lot 1, Twin Creek, Block Five as shown in Plat Book 50, Page 29 in the Office of the Recorder of Lake County, Indiana; thence South 0 degrees 34 minutes 33 seconds West, a distance of 165.52 feet to the Southeast corner of Lot 2; thence North 70 degrees 45 minutes 05 seconds East, a distance of 16.70 feet; thence South 46 degrees 00 minutes 30 seconds East, a distance of 125.54 feet; thence Easterly along the North boundary of said Twin Creek, Block Five, being a curve concave to the South and having a radius of 740.00 feet (the chord of which curve bears North 86 degrees 43 minutes 44 seconds East, a distance of 578.09 feet), an arc distance of 593.90 feet; thence North 70 degrees 16 minutes 45 seconds West, along the Southwesterly right of way line of the Grand Trunk Railroad, a distance of 946.36 feet; thence Southerly along a curve concave to the West and having a radius of 60.00 feet (the chord of which bears South 9 degrees 34 minutes 14 seconds East, a distance of 104.65 feet), an arc distance of 127.14 feet; thence South 89 degrees 25 minutes 28 seconds East, along the North line of said Lot 1, a distance of 191.89 feet to the point of beginning, all in Munster, Lake County, Indiana.



- Existing sanitary sewer and MH
- Existing storm sewer and MH
- Existing utility box
- Existing transformer pad
- Existing elevation
- Existing water valve
- Existing fire hydrant
- Existing 16" water main

Temporary Bench Mark = 613.49 @ rim of rear yard basin at North line of T.O. Lot 6.



TORRENCE ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8918
website: www.torrence.com

~ Tuckahoe Development ~
Munster, Lake County, Indiana
EXISTING CONDITIONS

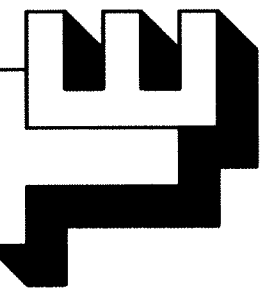
06-25-2013
REVISIONS:
DATE: 03/09/2007

CLIENT: McFarland Homes
1800 Rimbiewood Drive Ste. A
Highland, Indiana 46322
JOB NO: 5129-2006
SCALE: 1" = 30'

SHEET
2 OF 9

~ Tuckahoe Development ~

A PLANNED UNIT DEVELOPMENT TO THE TOWN OF
MUNSTER, LAKE COUNTY, INDIANA



TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8918 website: www.torrenga.com

~ Tuckahoe Development ~
Munster, Lake County, Indiana
SITE PLAN

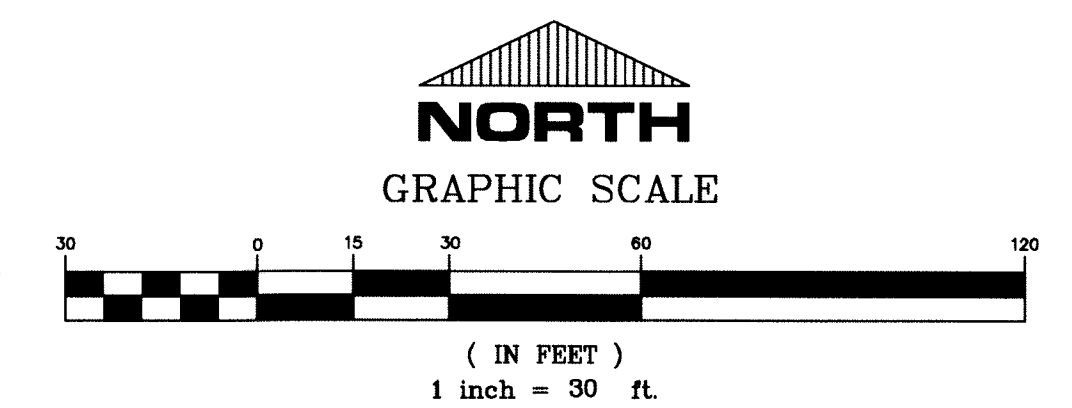
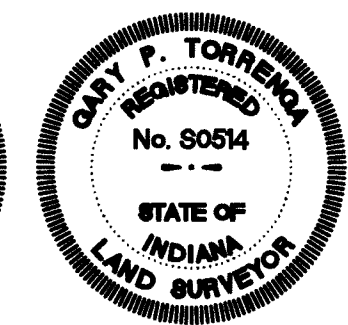
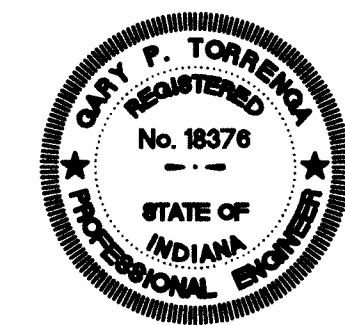
CLIENT: McFarland Homes
2300 Ramblewood Drive Ste. A
Highland, Indiana 46322
JOB NO: 5129-2006
DATE: 03/09/2007
REVISIONS:
06-17-2014
06-25-2013

SCALE: 1" = 30'

SHEET
3 OF 9

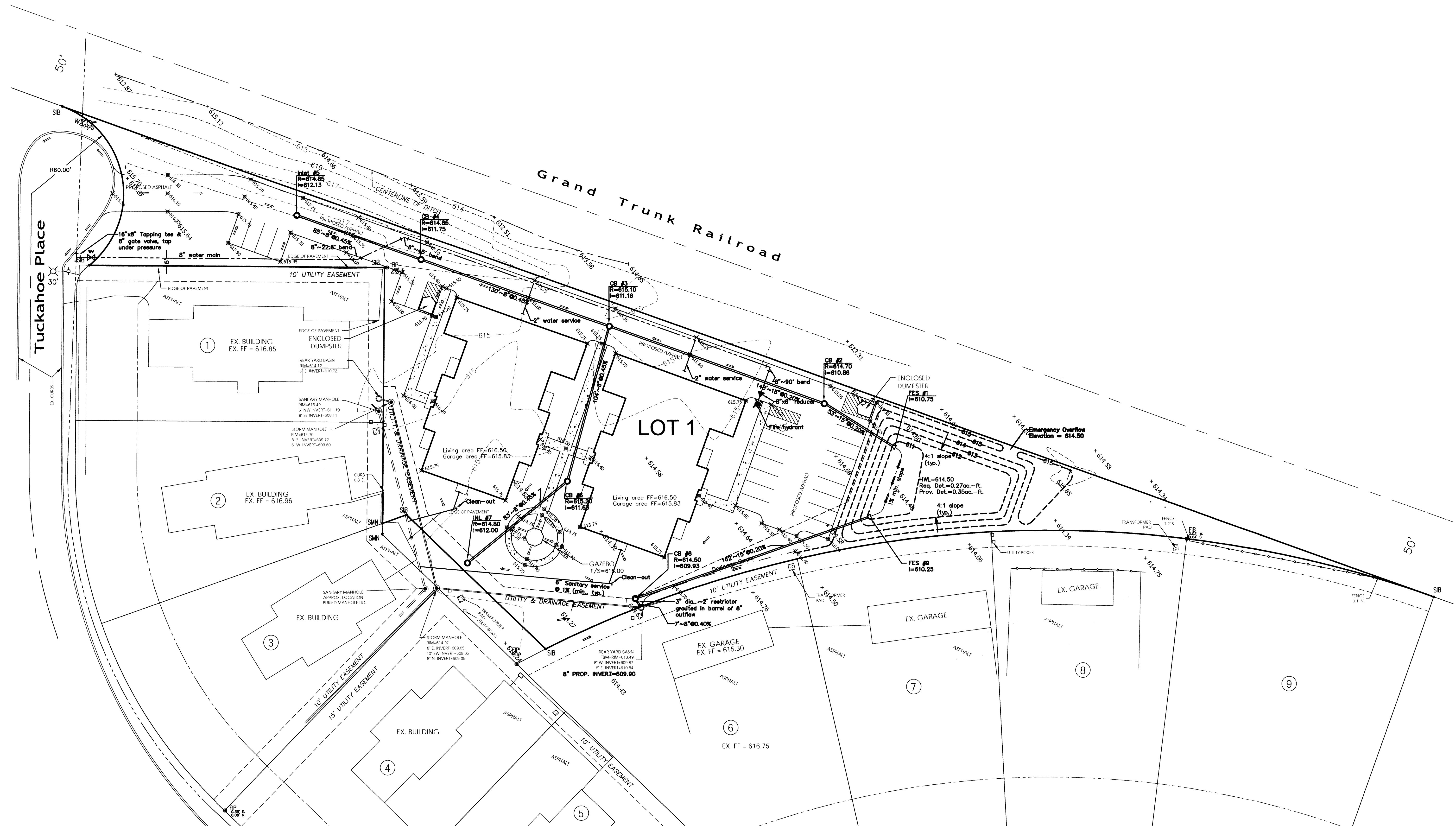


- Existing utility box
- Existing transformer pad



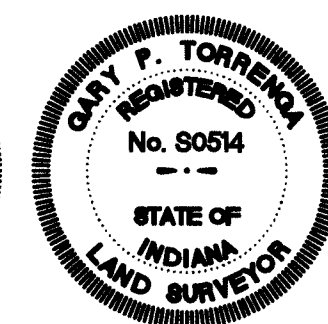
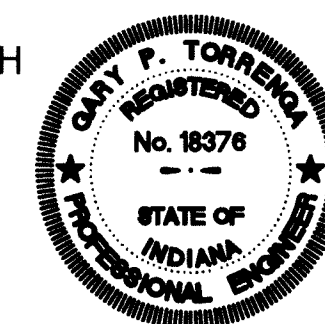
~ Tuckahoe Development ~

A PLANNED UNIT DEVELOPMENT TO THE TOWN OF
MUNSTER, LAKE COUNTY, INDIANA

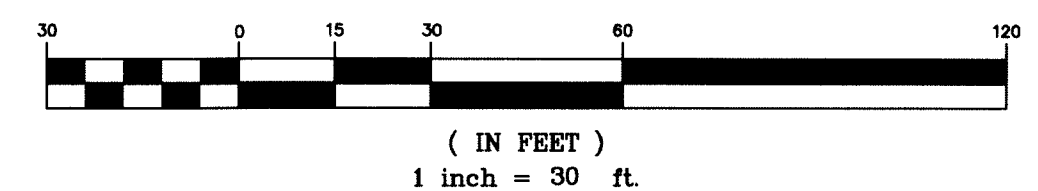


- Existing sanitary sewer and MH
- Existing storm sewer and MH
- Existing utility box
- Existing transformer pad
- Existing elevation
- Existing water valve
- Existing fire hydrant
- Existing 16" water main

- Proposed storm sewer and MH
- Proposed elevation
- Proposed water valve
- Proposed fire hydrant
- Proposed 8" water main



NORTH
GRAPHIC SCALE



TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 896-8918
website: www.torrence.com

~ Tuckahoe Development ~
Munster, Lake County, Indiana
UTILITY & DRAINAGE PLAN

06-17-2014
08-27-2013
06-25-2013
REVISIONS:
DATE: 03/09/2007

CLIENT: McFarland Homes
2300 Ramblewood Drive Ste. A
Highland, Indiana 46322
JOB NO: 5129-2006
SCALE: 1" = 30'

SHEET
4 OF 9

GENERAL SPECIFICATIONS FOR WATER MAINS

1. All work shall be performed in accordance with the Codes, Ordinances and Standards of the Town of Munster, and the State of Indiana.
2. All water main pipe shall be Ductile Iron Pipe (AWWA C151 C-52) with bell and spigot push-on rubber gasket joints (AWWA C111). All water main pipe shall be installed with a minimum cover of 5.0 feet from top of curb to top of pipe. All fire hydrants, tees, bends and fittings shall be suitably harnessed or thrust blocked with concrete.
3. All improvements installed across paved or future paved areas shall be backfilled with sand or graded stone aggregate to the subgrade.
4. All water valves 12" or larger shall be placed in vaults.
5. On 12" water main bends, restrained joints shall be used, megalug or equal. At 90° bends, the water main shall be additionally restrained at 1 joint in each direction.
6. All fire hydrants shall be WB-67 Waterous Pacer hydrant with 5¼" valve openings and shall be backfilled with 3/4" stone for drainage purposes.
7. All water mains shall be laid at least 10 feet (3.0m) horizontally from any existing or proposed sewer. The distance shall be measured from outside of pipe to outside of pipe. All sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (46 cm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe.
8. Care should be taken in parkway areas to assure compaction acceptable for the future stability of driveways and sidewalks. While special backfill material is not required, it shall be the responsibility of the Contractor to protect against substantial future settlement of backfilled areas. The Contractor shall provide special backfill material across driveways and sidewalks in the event that a water main is installed underneath.
9. Each building in this subdivision shall be provided with a 2" diameter copper water service tap extended from the water main to the building foundation. Water main service lines shall be installed with a minimum cover of 5.0 feet from the top of the pavement to the top of the service line.
10. All water main pipe shall be disinfected by the use of liquid chlorine. The Contractor shall notify the town of Munster when the water main system (or portion thereof) is ready for testing.
11. The Contractor is responsible for water quality tests done by a State Certified Laboratory. The Town of Munster Water Department staff shall be notified and be present while tests are being performed. The approved water system shall be turned on by the Water Department Staff, only after the water quality reports have been approved.
12. The newly installed water main (or portions thereof) shall be subjected to a pressure and leakage test, using hydrostatic testing. Test pressure shall not be less than 1.5 times the working pressure or exceed pipe design pressure. Pressure shall not vary by more than ± 5 PSI for a minimum of a 2 hour duration test. The exposed pipe and joints shall be examined carefully during the test and any damaged or defective pipe or joints shall be replaced, and the test shall be repeated. The allowable leakage shall not exceed 11.65 gpd/mi/in of nominal pipe diameter at a pressure of 150 PSI.
- All visible leaks are to be repaired regardless of the amount of leakage. The contractor shall be responsible for supplying all testing materials and appurtenances. The Town of Munster shall be notified when the water main (or portion thereof) is ready for testing.
13. The contractor is responsible for the preparation of "As Built" construction drawings showing actual sizes and lengths of pipe installed (i.e. from manhole to manhole or tee to valve, etc.), location of service taps and any structures added or omitted in comparison with these engineering plans. The Contractor shall supply the Developer (through the Project Engineer) with one set of reproducible original "As-Built" Plans and shall supply the Town of Munster with 2 copies thereof prior to and as a condition of the final acceptance.

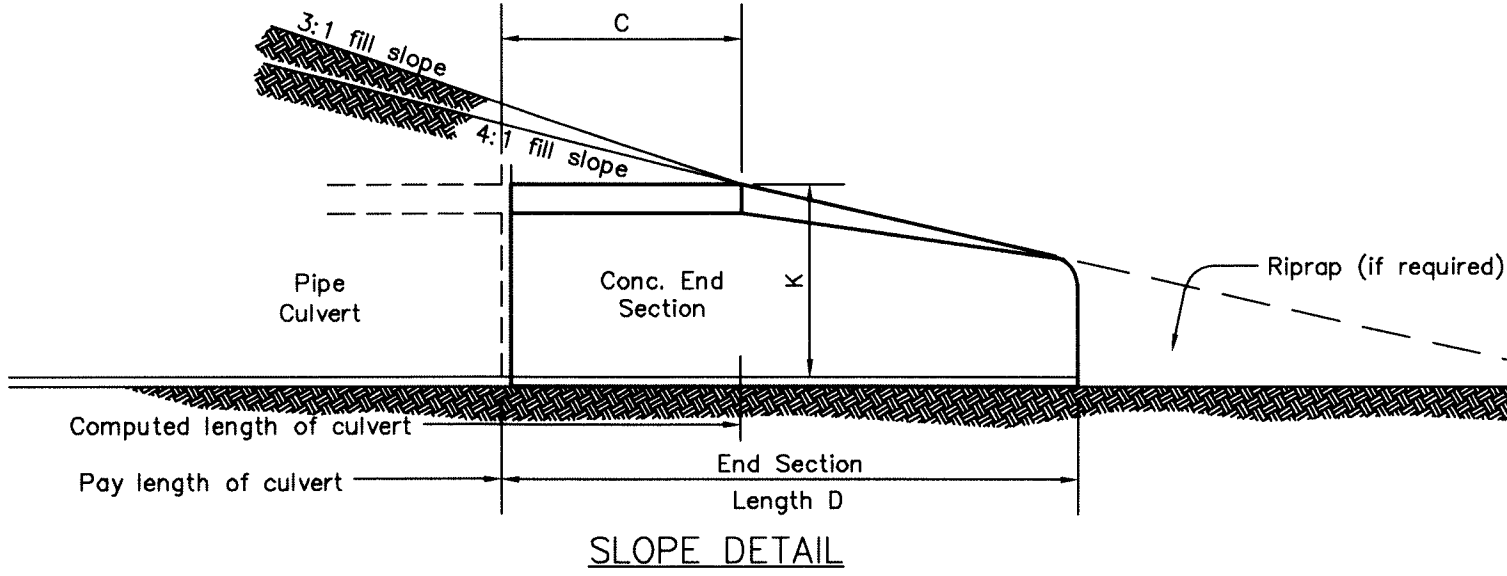
GENERAL SPECIFICATIONS FOR STORM SEWERS

1. All work shall be performed in accordance with the Codes, Ordinances and Standards of the Town of Munster, Lake County, Indiana.
2. All storm sewer pipe, branches and fittings shall conform to either of the following: (A) Extra strength vitrified clay pipe (ASTM C-700) with bell and spigot push-on rubber gasket joints (ASTM C-425) or: (B) Reinforced concrete pipe (ASTM C-76) with bell and spigot or tongue and groove push on mastic joints. Class V reinforced concrete pipe shall be used for lines 15" diameter or under and Class III shall be used for lines 18" and over or: (C) Poly-vinyl chloride (PVC), SDR 26 (ASDM D-3034), with push-on rubber gasket joints (ASTM C-3212).
- 3.Gasketed joints shall be used on all storm sewers.
4. Storm sewers 18" to 27" with less than 3' cover shall be Class IV pipe.
5. All storm sewer manholes shall be standard precast concrete units (ASTM C-478) conforming with the standard details sheet of these plans.
6. All improvements installed across paved or future paved areas shall be backfilled with sand or graded stone aggregate to the subgrade line.
- 7.Dumped Rip-Rap will be provided at all end sections, to produce a surface of approximate regularity. The finished surface shall not vary by more than 9 inches and the depth of Rip-Rap shall not be less than 12 inches nor more than 24 inches.
8. All sewers shall be laid at least 10 feet (3.0m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. All sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (46 cm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe.
9. The Contractor is responsible for the preparation of "As Built" construction drawings showing actual sizes and lengths of pipe installed (i.e. from manhole to manhole or tee to valve, etc.), location of service taps and any structures added or omitted in comparison with these engineering plans. The Contractor shall supply the Developer (through the Project Engineer) with one set of reproducible original "As-Built" and shall supply the Town of Munster with 2 copies thereof prior to and as a condition of final acceptance.

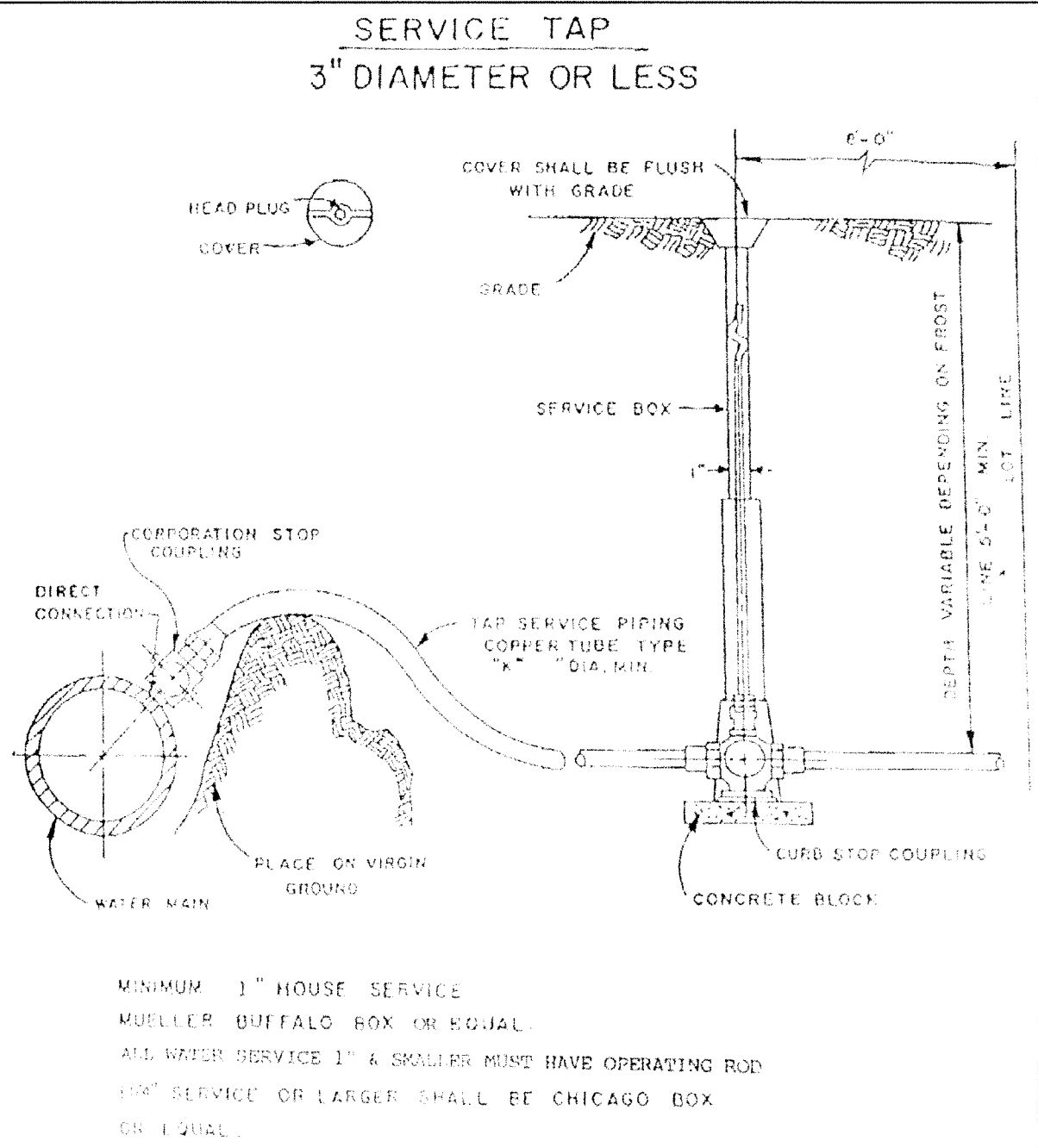
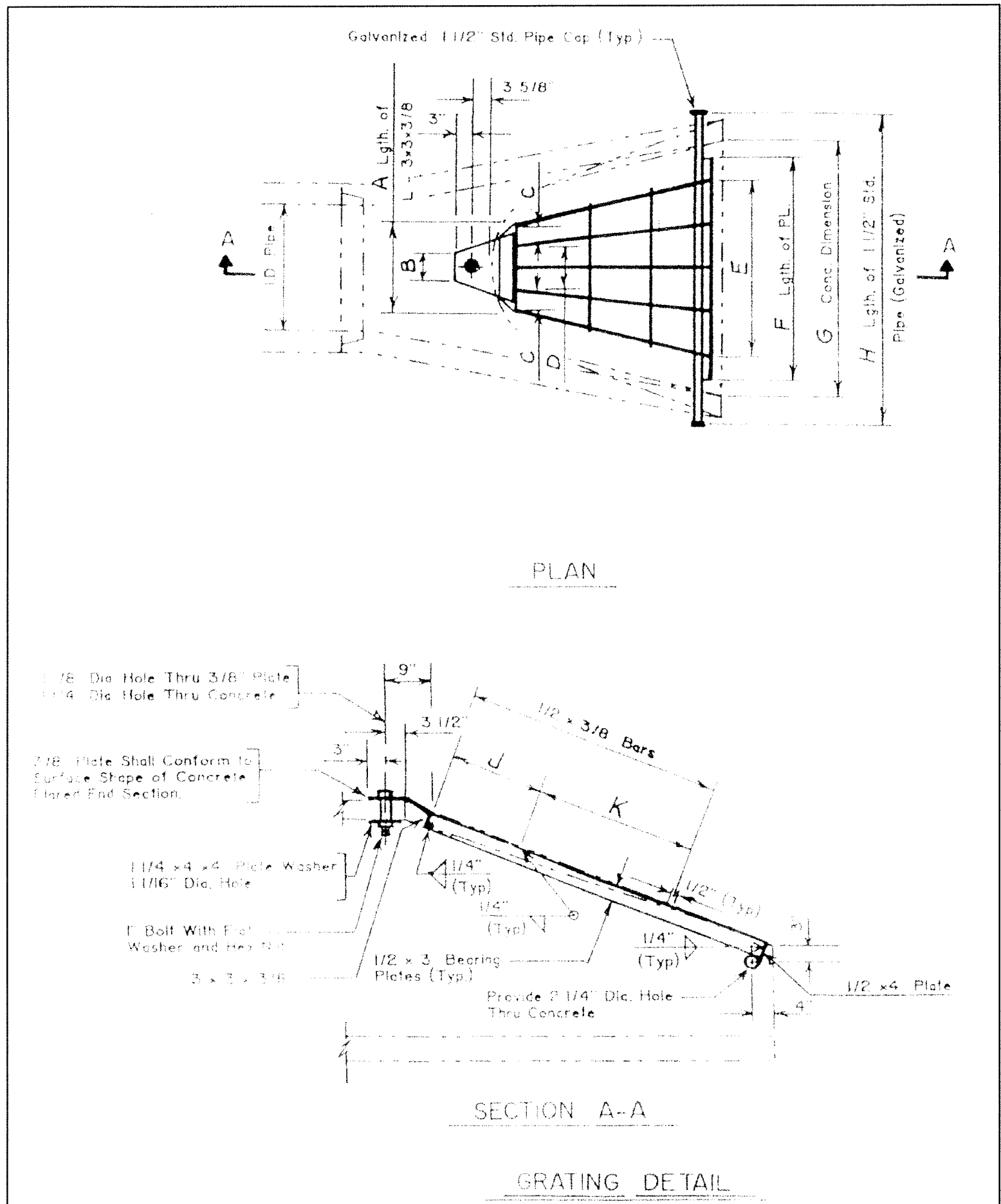
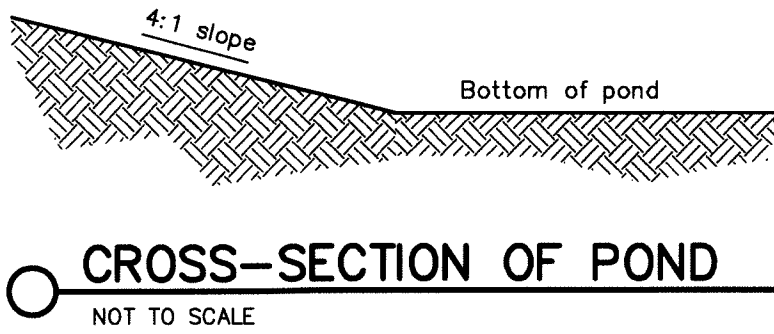
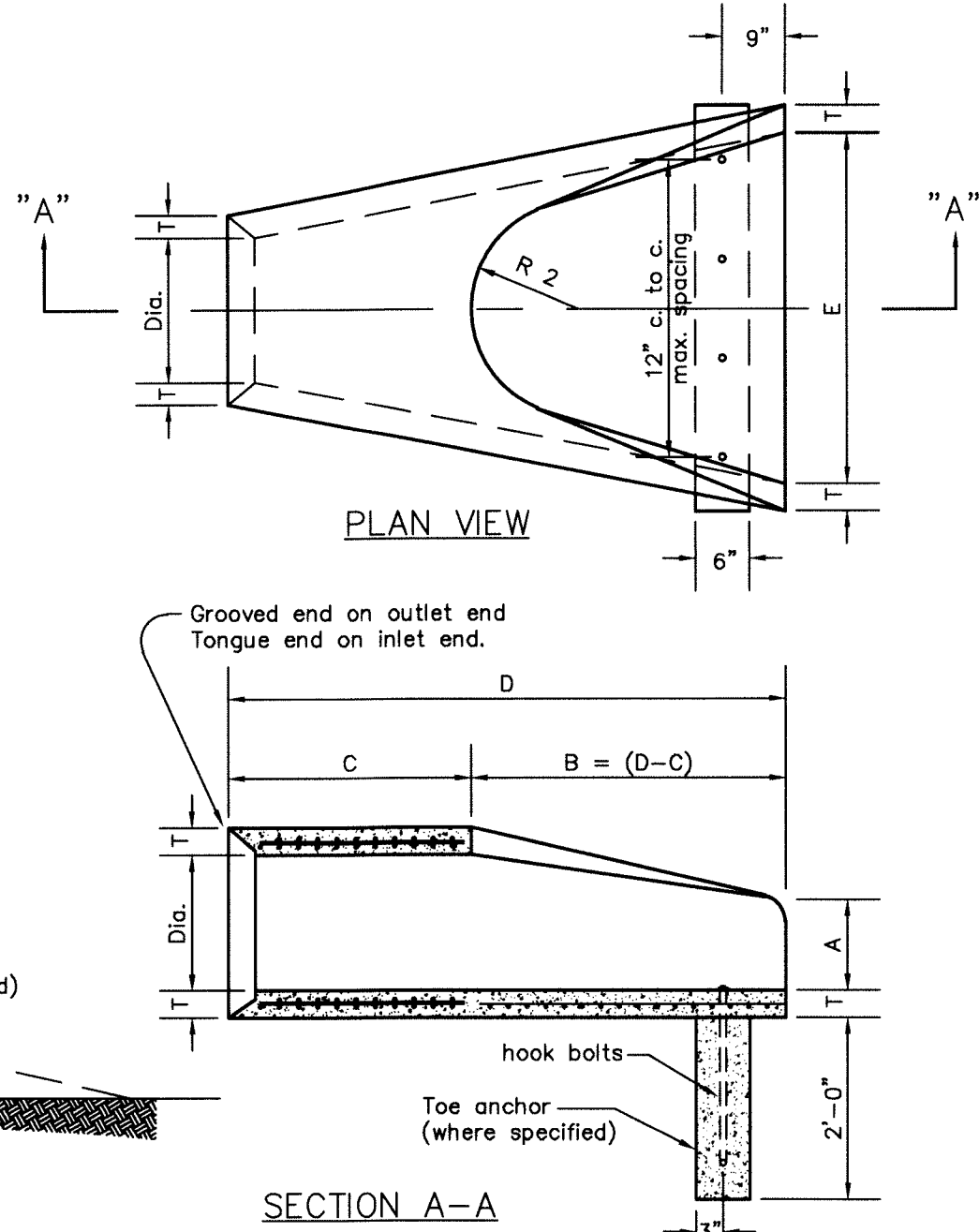
GENERAL SPECIFICATIONS FOR SANITARY SEWER

1. All work shall be performed in accordance with the Codes, Ordinances and Standards of the Town of Munster, Lake County, and the State of Indiana.
2. All sanitary sewer pipe, branches and fittings shall conform to one of the following: (a) Extra strength vitrified clay pipe (ASTM C-700) with push on rubber gasket joints (ASTM C-425). (b) Poly-vinyl chloride (PVC), SDR 26 (ASTM D-3034), with push-on rubber gasket joints (ASTM C-3212). Six inch service pipes shall be in accordance with the infrastructure improvement codes of the Town of Munster.
3. All improvements installed across paved or future paved areas shall be backfilled with sand or graded stone aggregate to the subgrade.
4. Each building in this subdivision shall be provided with a 6" PVC (SDR 35) sanitary sewer service tap extended from the main sewer to the foundation with a clean-out as shown on the plan.
5. Care should be taken in parkway areas to assure compaction acceptable for the future stability of driveways and sidewalks. While special backfill material is not required, it shall be the responsibility of the Contractor to protect against substantial future settlement of backfilled areas. The contractor shall provide special backfill material across driveways and sidewalks in the event that a sewer or main is installed underneath.
6. The Contractor is responsible for the preparation of "As Built" construction drawings showing actual sizes and lengths of pipe installed (i.e. from manhole to manhole or tee to valve, etc.), location of service taps and any structures added or omitted in comparison with these engineering plans. The Contractor shall supply the Developer (through the Project Engineer) with one set of reproducible original "As-Built" Plans and shall supply the Town of Munster with 2 copies thereof prior to and as a condition of the final acceptance.

Dimensions								
Dia.	T (min.)	A	C	D	E	K	R	2
12"	2"	5"	4'-3"	6'-2"	2'-0"	1.3	9"	
15"	2-1/4"	7"	4'-0"	6'-3"	2'-6"	1.5	11"	
18"	2-1/2"	11"	4'-1"	6'-2"	3'-0"	1.8	12"	
21"	2-3/4"	11"	3'-6"	6'-3"	3'-6"	2.1	13"	
24"	3"	1'-0"	2'-8"	6'-3"	4'-0"	2.3	14"	
27"	3-1/4"	1'-1"	2'-5"	6'-3"	4'-6"	2.6	14-1/2"	
30"	3-1/2"	1'-2"	1'-10"	6'-3"	5'-0"	2.9	15"	
33"	3-3/4"	1'-3"	3'-6"	8'-3"	5'-6"	3.1	17-1/2"	
36"	4"	1'-5"	3'-1"	8'-3"	6'-0"	3.4	20"	



PRECAST CONCRETE END SECTION



TORRENGA ENGINEERING, INC.

CONSULTING ENGINEERS & LAND SURVEYORS

907 RIDGE ROAD, MUNSTER, INDIANA 46321

website: www.torrence.com

Tuckahoe Development

Munster, Lake County, Indiana

DETAILS & SPECIFICATIONS

CLIENT: McFarland Homes
2300 Randlewood Drive Ste. A
Highland, Indiana 46322

JOB NO: 5129-2006
SCALE: As shown

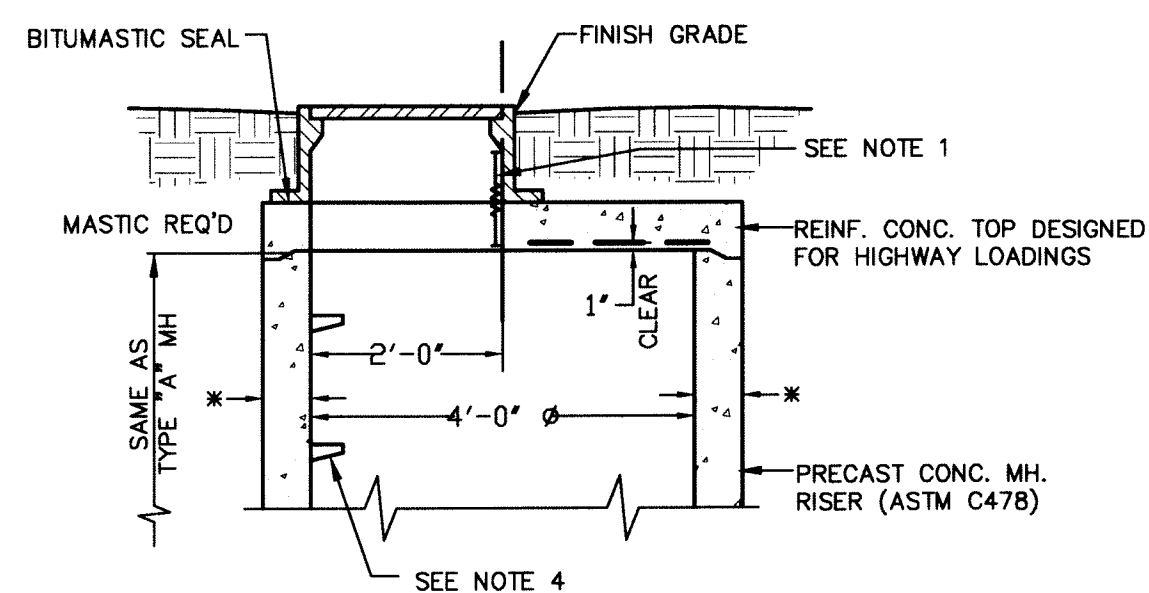
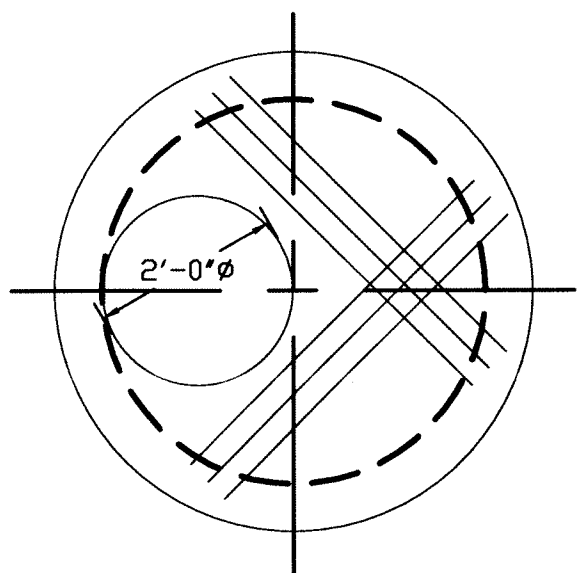
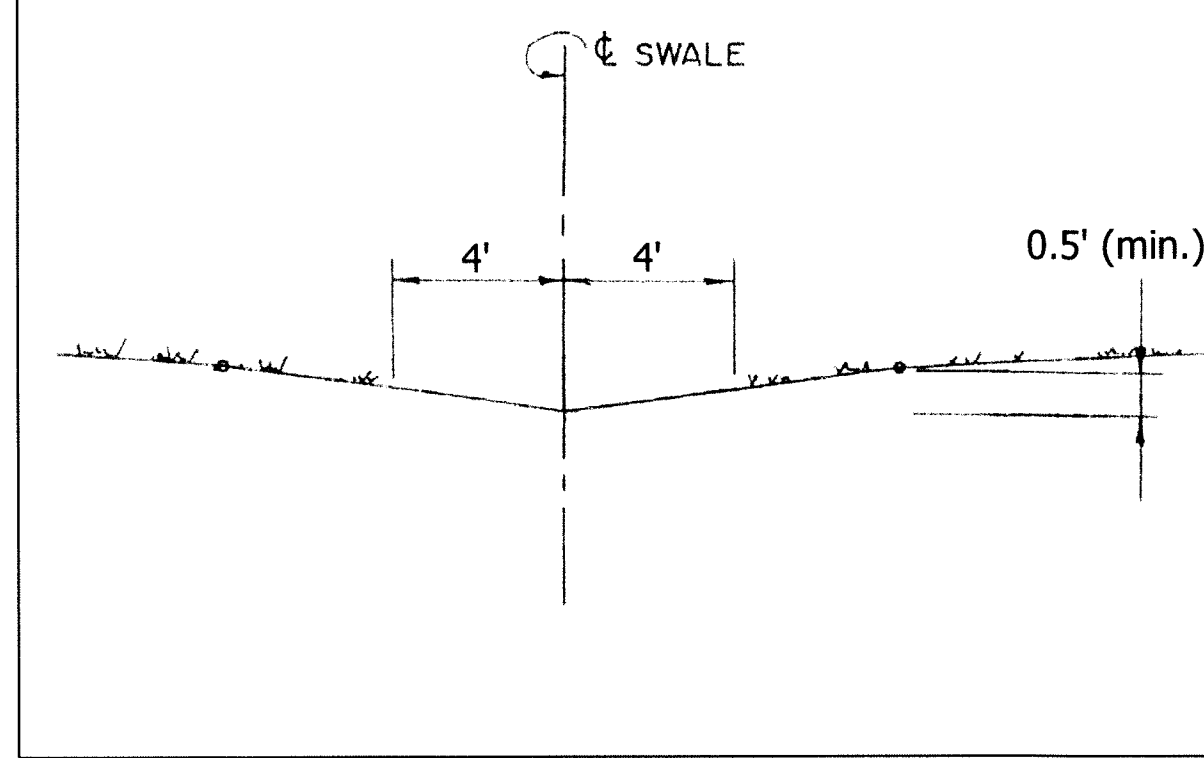
06-25-2013
DATE: 03/09/2007

REVISIONS:

SHEET

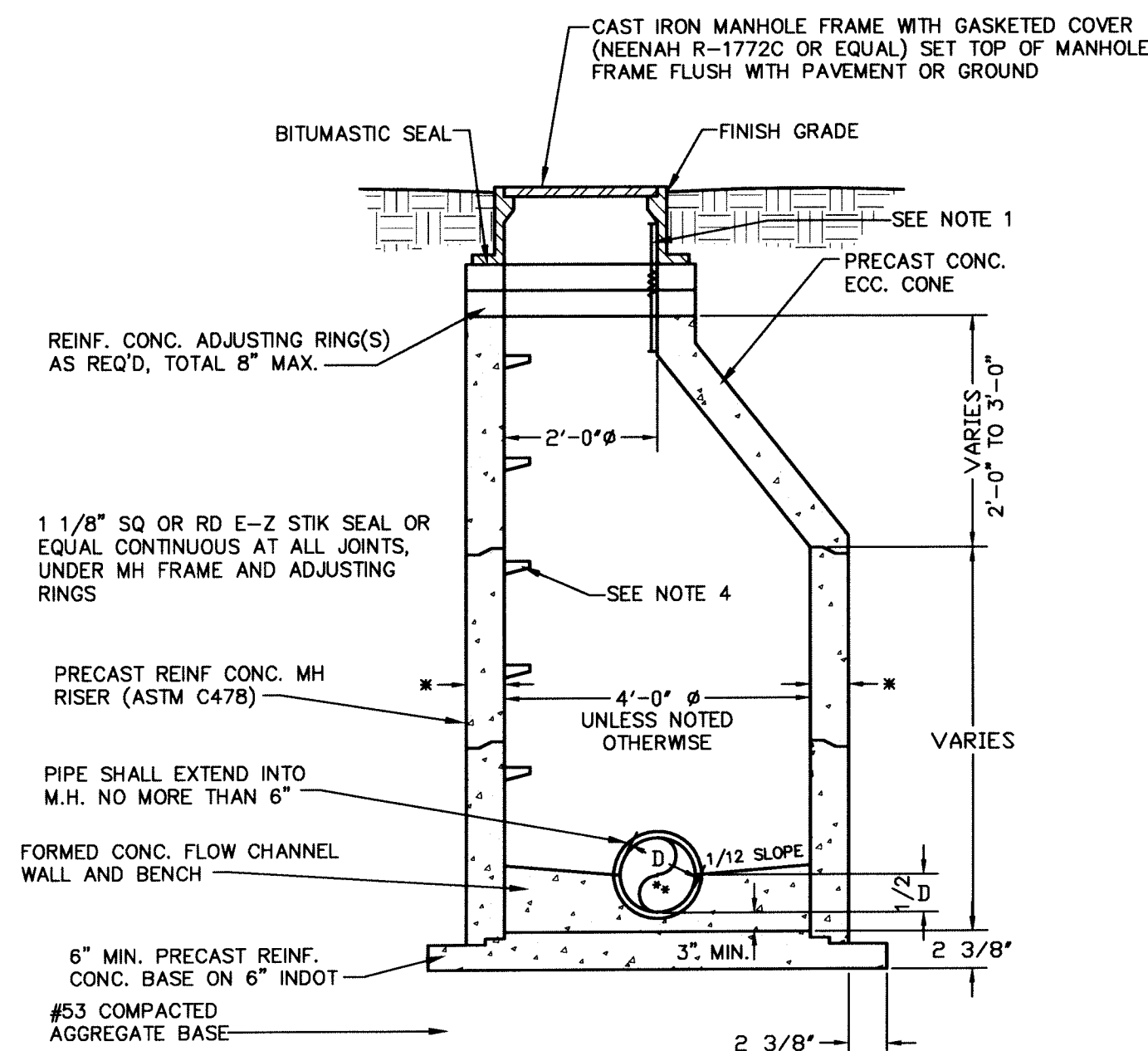
5 OF 9

FILE NO: Z:\Twin Daks Condolm\lms.dwg 5/12/2006.dwg 8/27/2013 9:31:49 AM CDT



TYPE "C" (FLAT TOP) MANHOLE

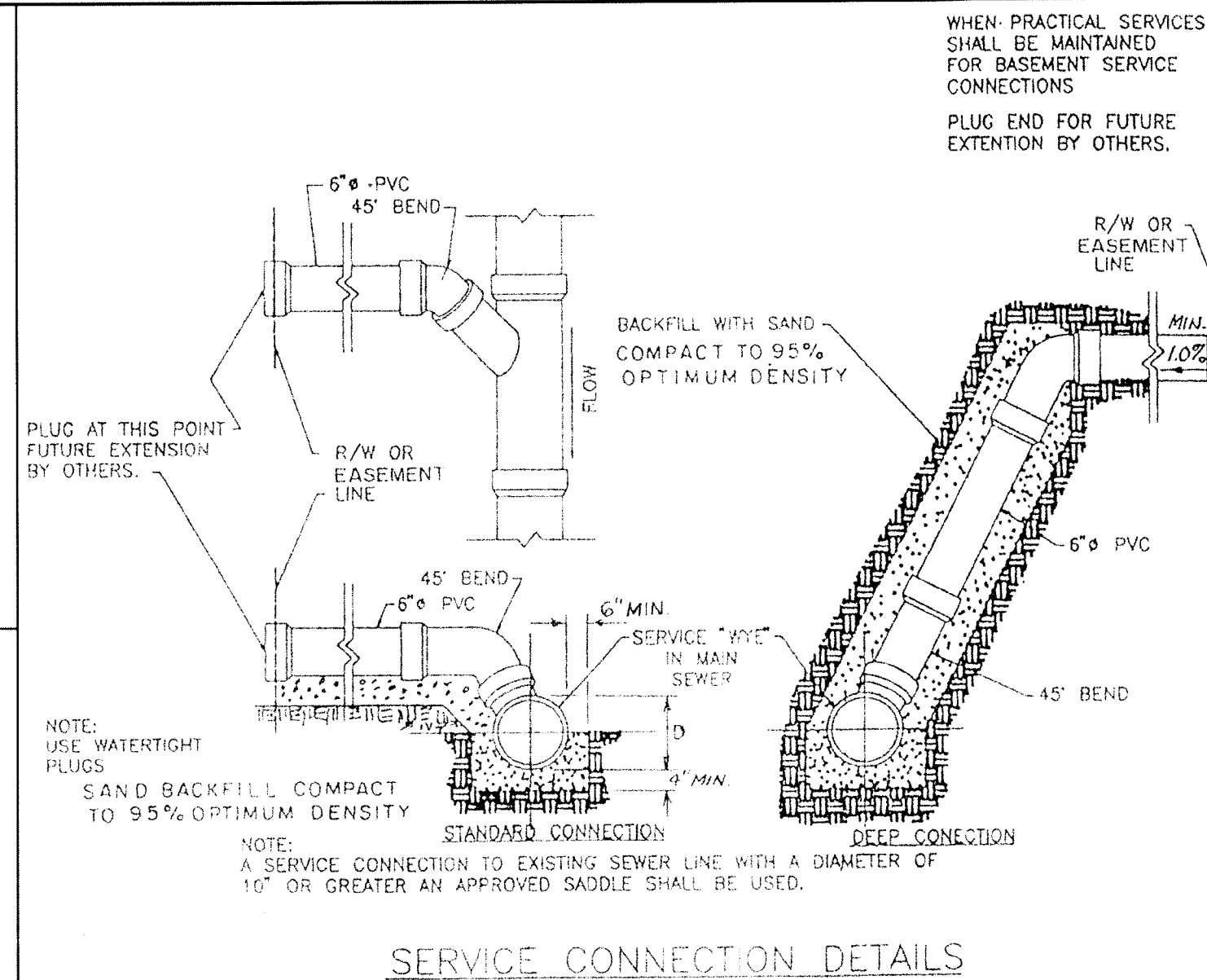
USED WHERE RESTRICTED HEAD ROOM WILL NOT ALLOW FOR TAPERED WALLS



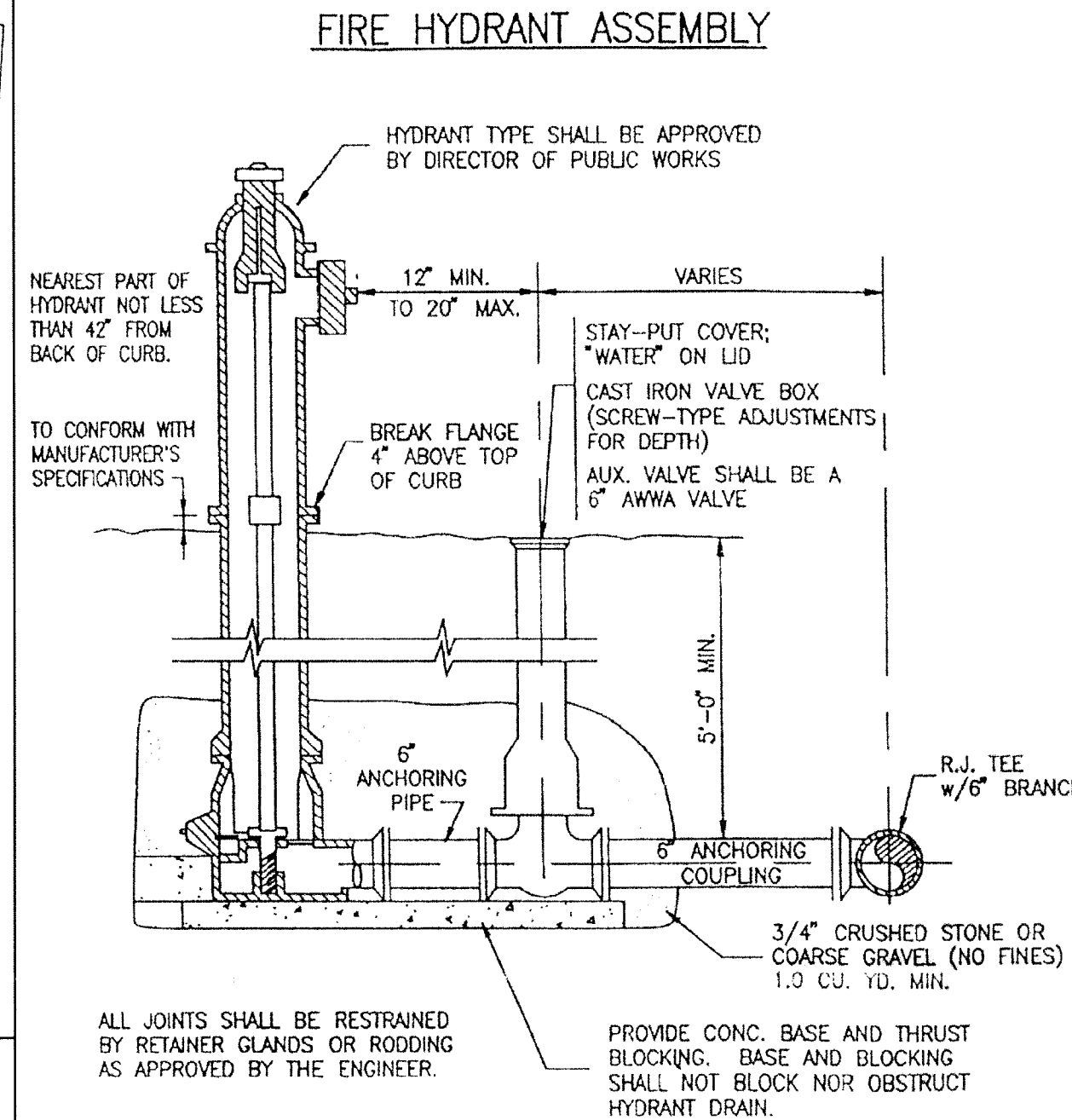
MANHOLE WALL THICKNESS TABLE	
M.H. I.D.	WALL THICKNESS
48"	5"
60"	6"
72"	7"

- NOTES:
- INTERNAL MH FRAME-CHIMNEY SEAL AS MANUFACTURED BY CRETEX SPECIALTY PRODUCTS OR EQUAL REQ'D FOR ALL MANHOLES IN PAVED AREAS ONLY.
 - WHERE DEPTH FROM TOP OF CASTING TO INVERT IS LESS THAN 5'-0", USE FLAT TOP MANHOLE TYPE "C" IN LIEU OF ECCENTRIC CONE.
 - WATERTIGHT SEAL IS REQ'D BETWEEN PRECAST RISER AND SEWER PIPE, TYPE A-LOK OR EQUAL.
 - COPOLYMER/STEEL MH STEPS AS MANUFACTURED BY M.A. INDUSTRIES, INC., OR EQUAL, AT 16" O.C.
- ** FOR PIPE SIZES RANGING FROM 8" TO 30" IN DIAMETER.

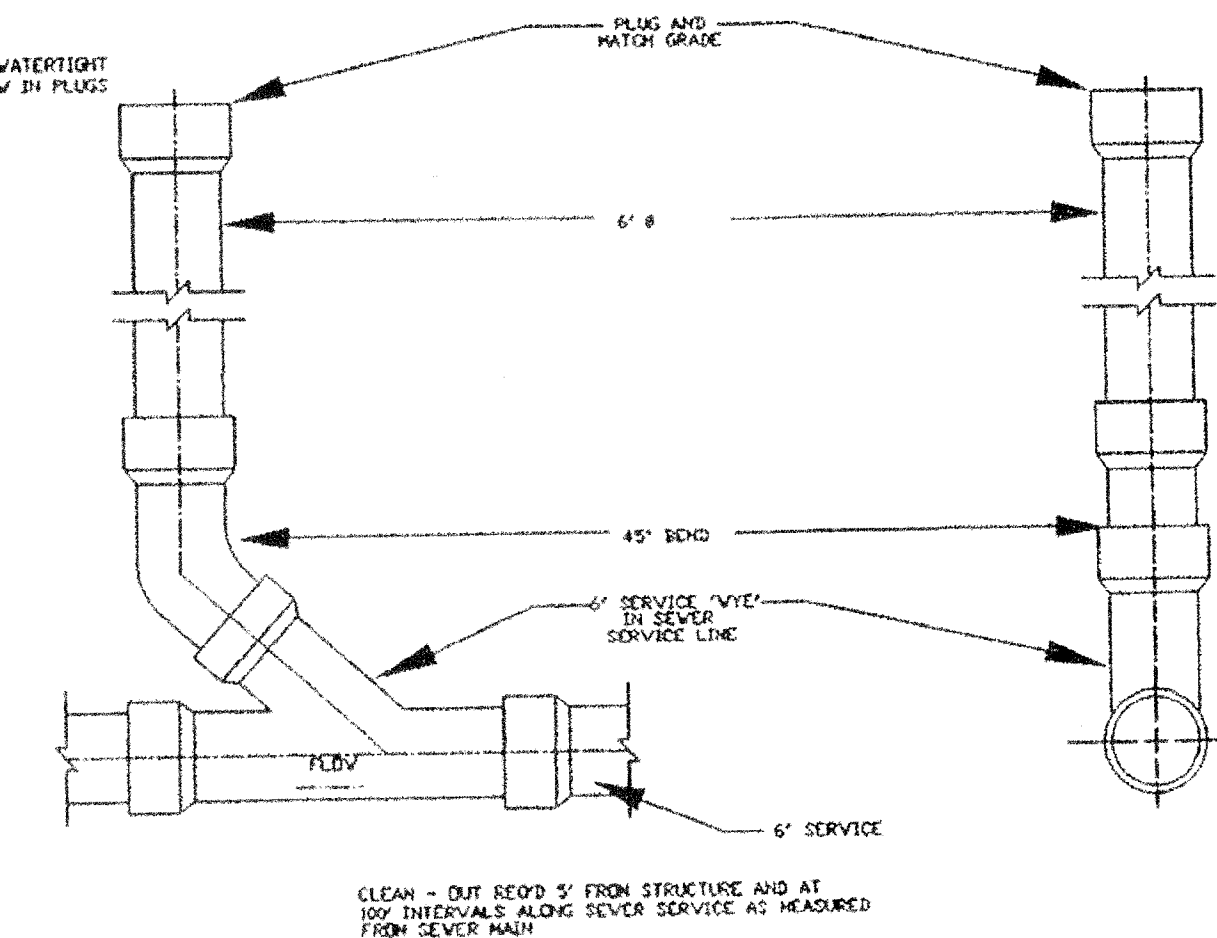
TYPE "A" MANHOLE



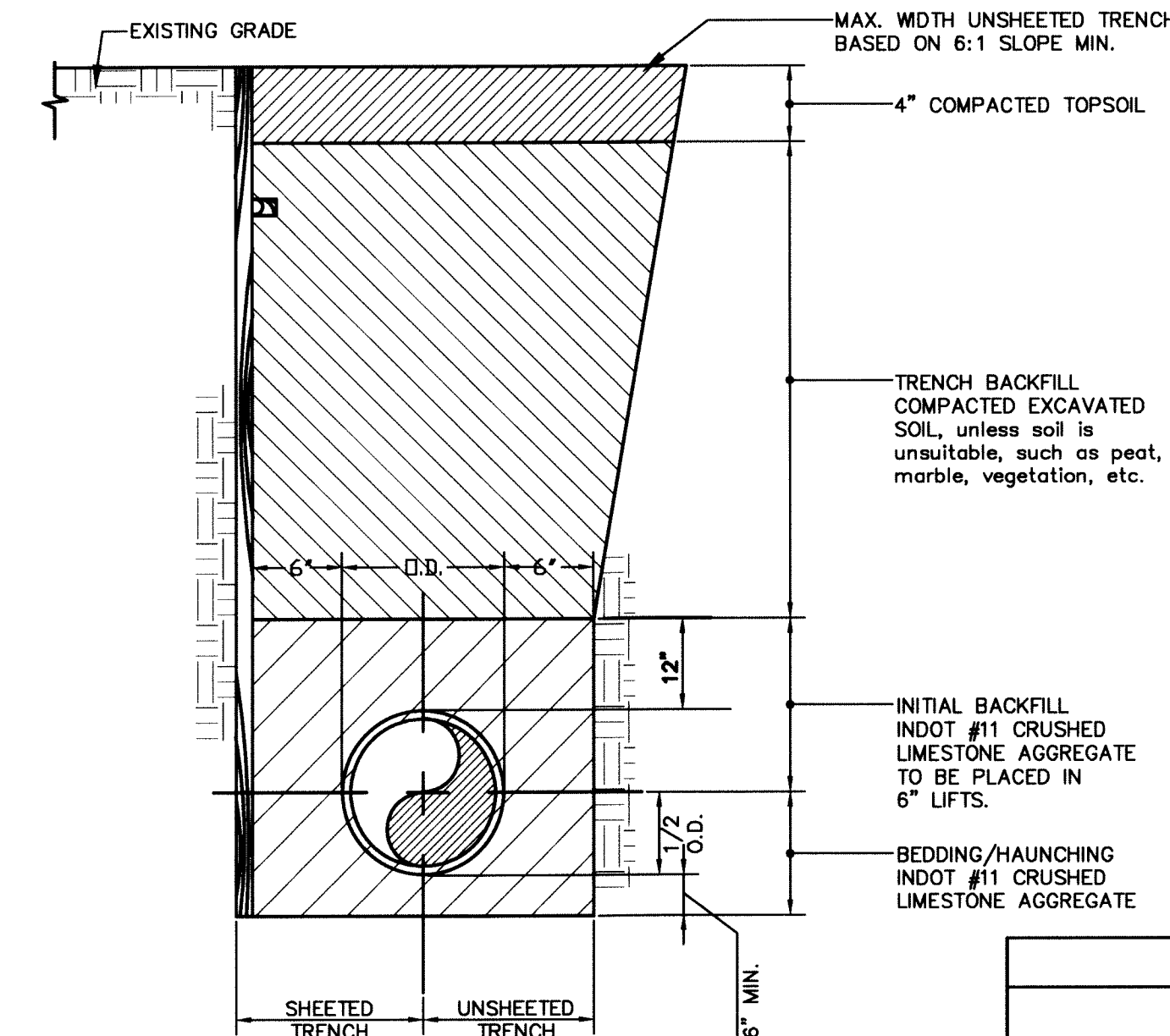
SERVICE CONNECTION DETAILS



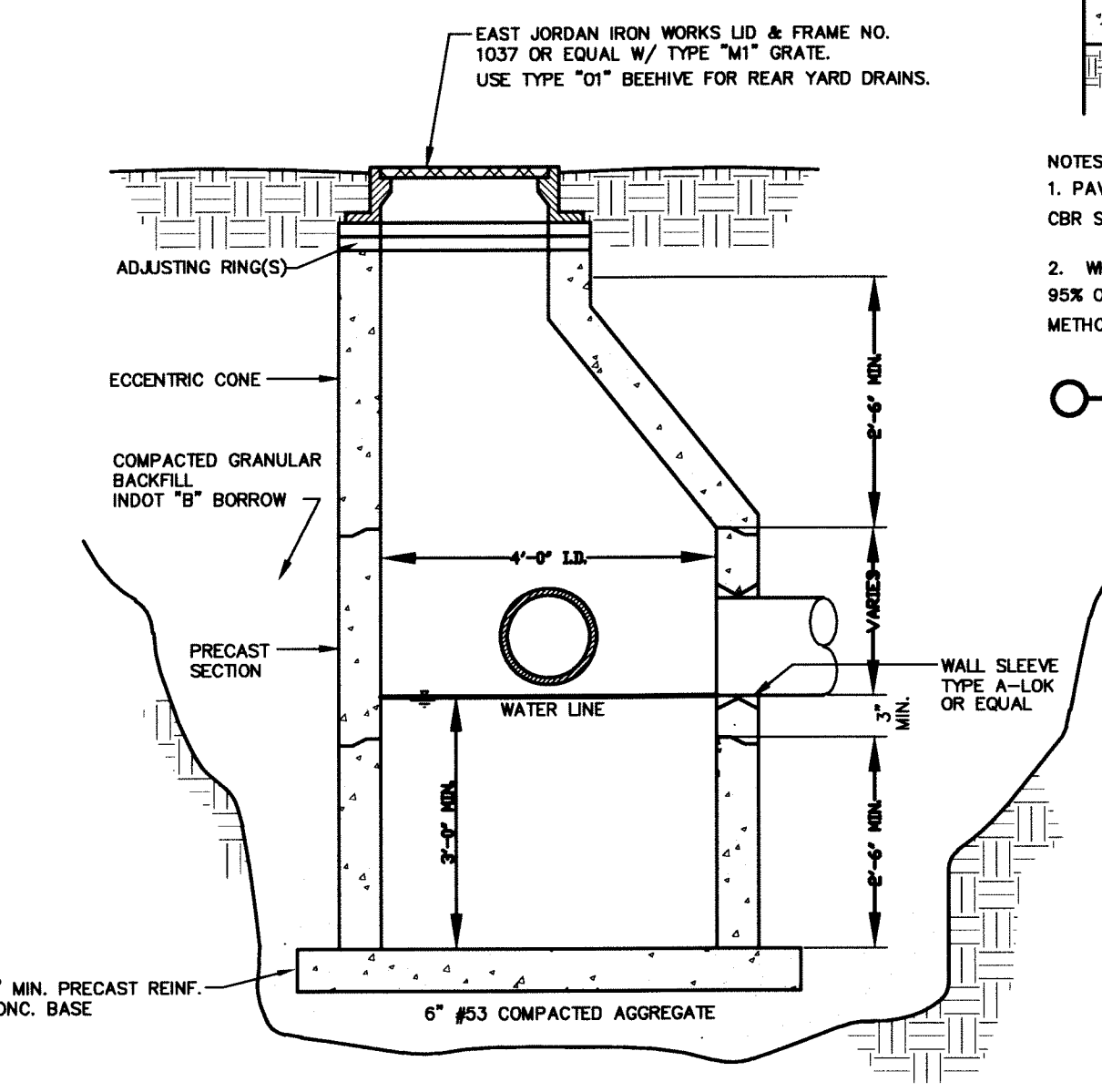
FIRE HYDRANT ASSEMBLY



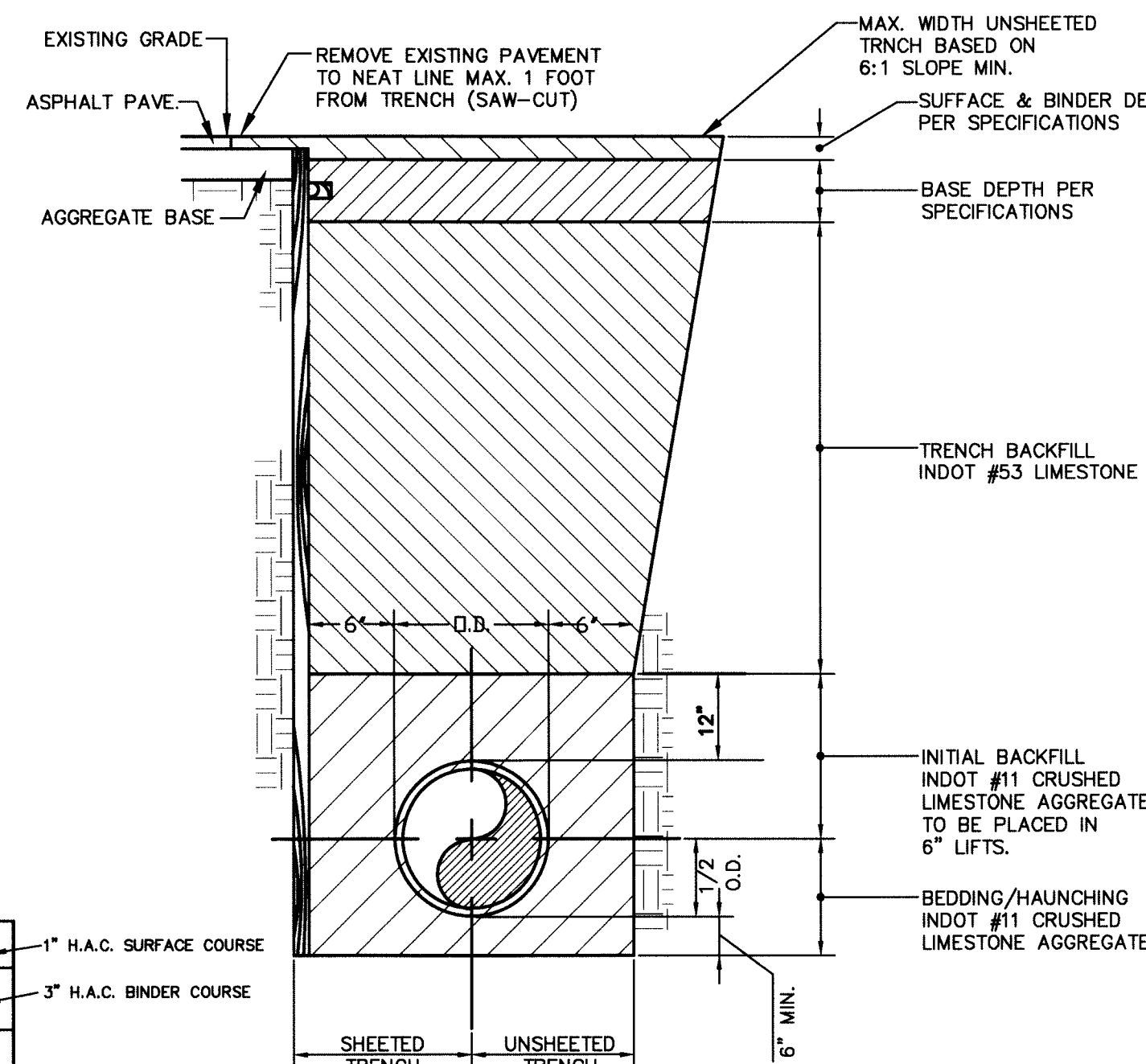
SANITARY SEWER CLEAN - OUT



PIPE BEDDING DETAIL FOR TRENCH IN GRASS AREAS



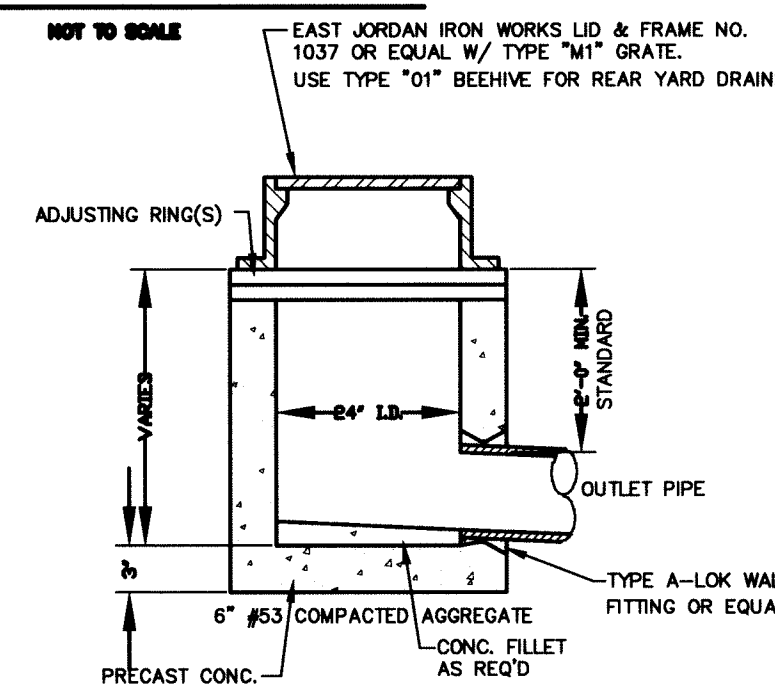
STANDARD CATCH BASIN



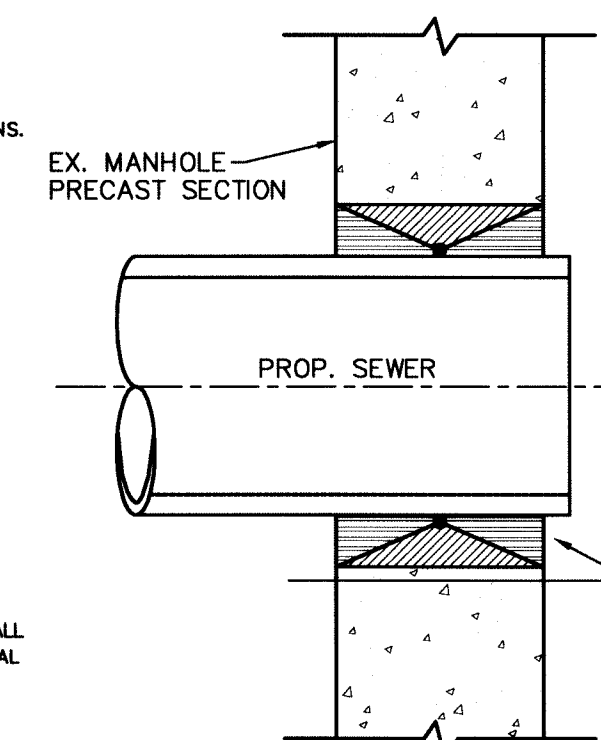
PIPE BEDDING DETAIL FOR TRENCH IN PAVED AREAS

- NOTES:
- PAVEMENT & AGGREGATE THICKNESS MAY VARY DEPENDING ON CBR SOIL TESTING RESULTS.
 - WHERE FILL IS REQUIRED, SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 METHOD OF TESTING.

TYPICAL PAVEMENT SECTION

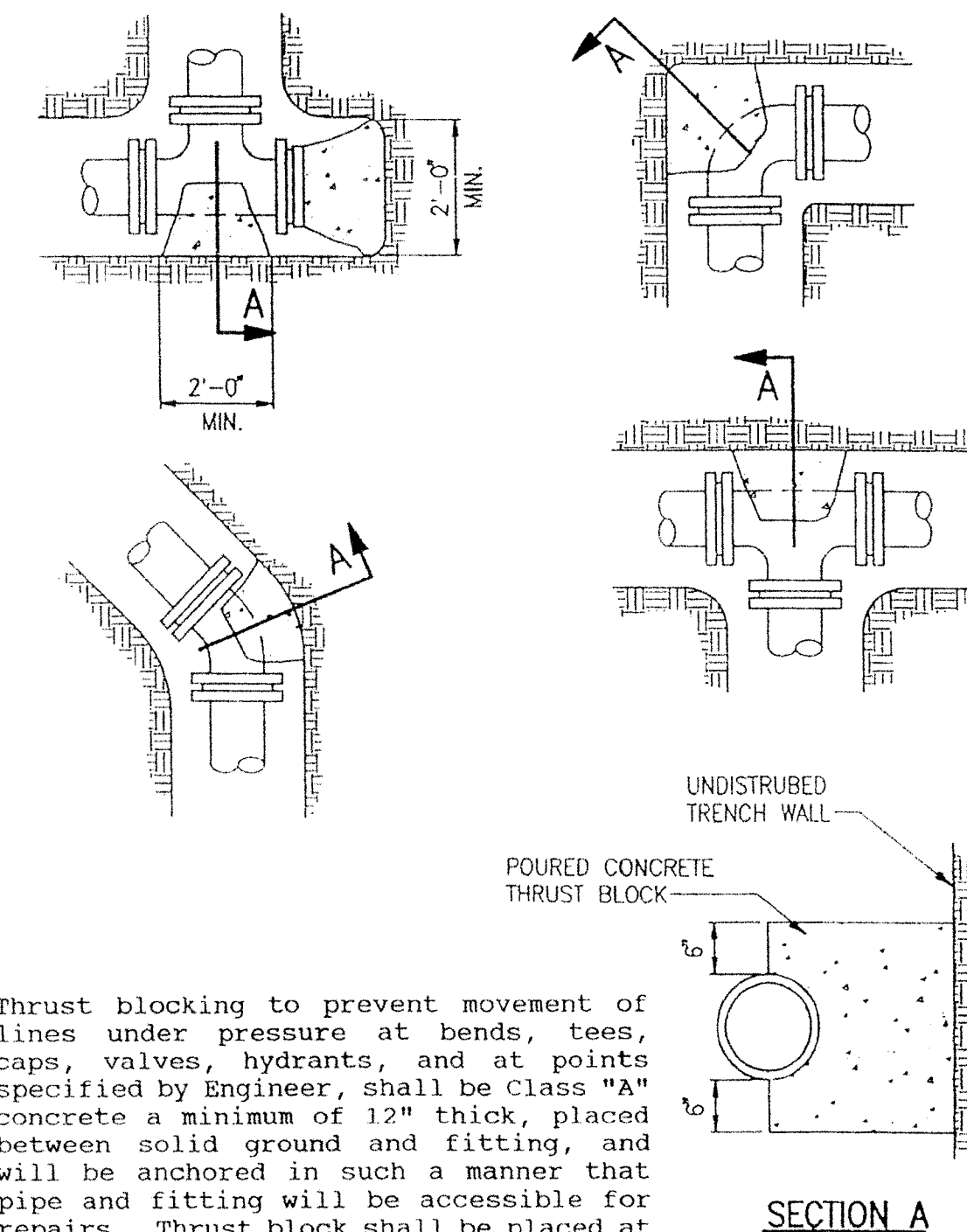


STANDARD INLET



PIPE CONNECTION DETAIL TO EXISTING MANHOLE

THRUST BLOCK INSTALLATIONS



Thrust blocking to prevent movement of lines under pressure at bends, tees, caps, valves, hydrants, and at points specified by Engineer, shall be Class "A" concrete a minimum of 12" thick, placed between solid ground and fitting, and will be anchored in such a manner that pipe and fitting will be accessible for repairs. Thrust block shall be placed at bends of 11 1/4 degree.



TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8918
website: www.torrenga.com

Tuckahoe Development
Munster, Lake County, Indiana
DETAILS & SPECIFICATIONS

RECEIVED
JUL 11 2014
66-25-2043-TENT
REVISIONS:
DATE: 03/09/2007

CLIENT: McFarland Homes
2300 Rumblewood Drive Ste. A
Highland, Indiana 46322
JOB NO: 5129-2006
SCALE: As shown

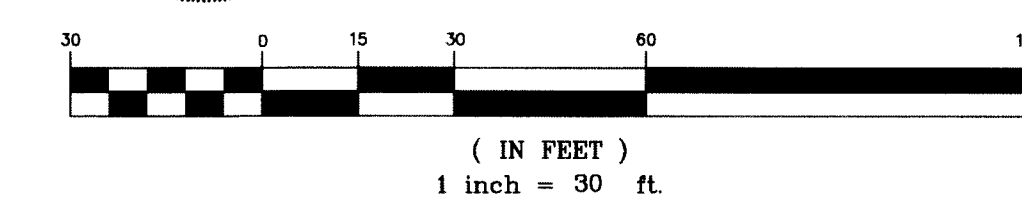
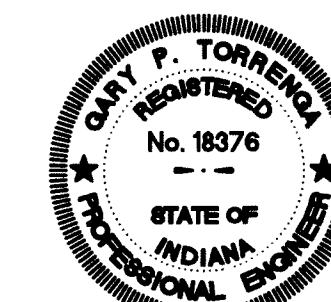
SHEET
6 OF 9

A PLANNED UNIT DEVELOPMENT TO THE TOWN OF
MUNSTER, LAKE COUNTY, INDIANA

- TEMPORARY GRAVEL ENTRANCE/EXIT
- TOPSOIL (SALVAGE AND UTILIZATION)
- BASKET CURB INLET PROTECTION
- FABRIC DROP INLET PROTECTION
- SILT FENCE (SEDIMENT FENCE)
- RIP-RAP

- TEMPORARY GRAVEL ENTRANCE/EXIT
- TOPSOIL (SALVAGE AND UTILIZATION)
- BASKET CURB INLET PROTECTION
- FABRIC DROP INLET PROTECTION
- SILT FENCE (SEDIMENT FENCE)
- RIP-RAP

1. THIS PROPERTY IS LOCATED IN FLOODPLAIN ZONE "B", AREA BETWEEN THE 100-YEAR AND 500-YEAR FLOOD, AND ZONE AS, AREA OF 100-YEAR FLOOD: BASE FLOOD ELEVATION AND FLOOD HAZARD DETERMINED. THERE ARE FLOODWAYS AND FLOODWAY PRINCIPLES ON THE PROPERTY, AS PER FLOOD INSURANCE RATE MAP (FIRM) FOR THE PROJECT AREA (FIRM NO. 17035C0001, FIRM DATE: 11/16/1983, DATED MAY 1983).
2. HYDROLOGIC UNIT CODE: 0712000303000, HART DITCH (PLUM CREEK) - DYER DITCH.
3. NO STATE OR FEDERAL WATER QUALITY PERMITS ARE REQUIRED FOR THE PROJECT SITE.
4. AT PRESENT, THE PROPERTY IS AN OPEN AREA, WITH THE EXISTING VEGETATIVE COVER BEING: PRIMARILY BLUEGRASS AND RYEGRASS.
5. THERE IS PRESENCE OF HYDRIC SOILS ON THIS PROPERTY, (bta) BOND SILTY CLAY AND (bss) RENSSAUR MUCKY SILT.
6. THERE ARE NO EXISTING WETLAND AREAS ON THIS PROPERTY, BUT IT IS SURROUNDING AREAS AS CL ASSIFIED TO THE U.S. FISH AND WILDLIFE SERVICE, NATIONAL WETLANDS INVENTORY, AND THE UNITED STATES DEPARTMENT OF THE INTERIOR.
7. THE PROPOSED TEMPORARY POND AND THOUGH NATURAL GROUND ABSORPTION ARE A POTENTIAL SOURCE OF FLOODING FOR THE PROJECT AREA.
8. SOIL STOCKPILES, BORROW AND DISPOSAL AREAS FOR THIS PROJECT ARE LOCATED WITHIN THE PROJECT SITE.
9. WHERE THE PROPOSED ROADS, STORM SEWERS, SANITARY SEWERS, WATER MAINS AND OTHER UTILITIES ARE TO BE CONSTRUCTED DURING CONSTRUCTION, ALL OTHER AREAS, EXISTING VEGETATIVE COVER WILL BE PRESERVED.
10. AN EROSION CONTROL AND GEOTECHNICAL MATERIAL SUPPLIES LIST IS AVAILABLE AT THE SCS OFFICE AND SHALL BE USED FOR THE PROJECT.
11. PERMANENTLY SEED ALL FINE GRADE AREAS (e.g., LANDSCAPE BERMS, DRAINAGE BERMS, DRAINAGE SWALES, EROSION CONTROL STRUCTURES, ETC.) AS EACH IS COMPLETED AND ALL AREAS WHERE ADDITIONAL WORK IS NOT REQUIRED FOR EROSION CONTROL SHALL BE SEED IMMEDIATELY AFTER COMPLETION OF THE WORK.
12. FROM AUGUST 10 - SEPTEMBER 30, SEEDING DATES BETWEEN 15 MAY AND AUGUST 10 MAY NEED TO BE IRRIGATED, FOR SEEDLING RECOMBENTIONS SEE PRACTICE 3.12, INDIANA HANDBOOK, FOR EROSION CONTROL.
13. THE PROPOSED EROSION CONTROL MEASURES SHALL BE MONITORED FOR THE PRESENCE OF DESIRABLE TREES FROM THE EFFECTS OF COMPACTION, GRADING DAMAGE, WOUND PREVENTION AND A PLAN FOR TREE REPAIRS FROM CONSTRUCTION ACTIVITIES. SEE THE SOIL CONSERVATION SERVICE OR THE STATE FORESTER FOR ASSISTANCE.



TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8918 website: www.torrengea.com

Tuckahoe Development ~
Munster, Lake County, Indiana
SOIL EROSION PLAN

08-27-2013	
06-25-2013	
	REVISIONS:
	DATE: 03/09/2007

CLIENT: McFarland Homes
2300 Ramblerwood Drive Ste. A
Highland, Indiana 46322

JOB NO: 5129-2006

SCALE: 1" = 30'

SHEET
7 OF 9

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT

(Practice 3.01)

Purpose: To provide a stable entrance/exit condition from the construction site, and to keep mud and sediment off public roads.

Requirements:

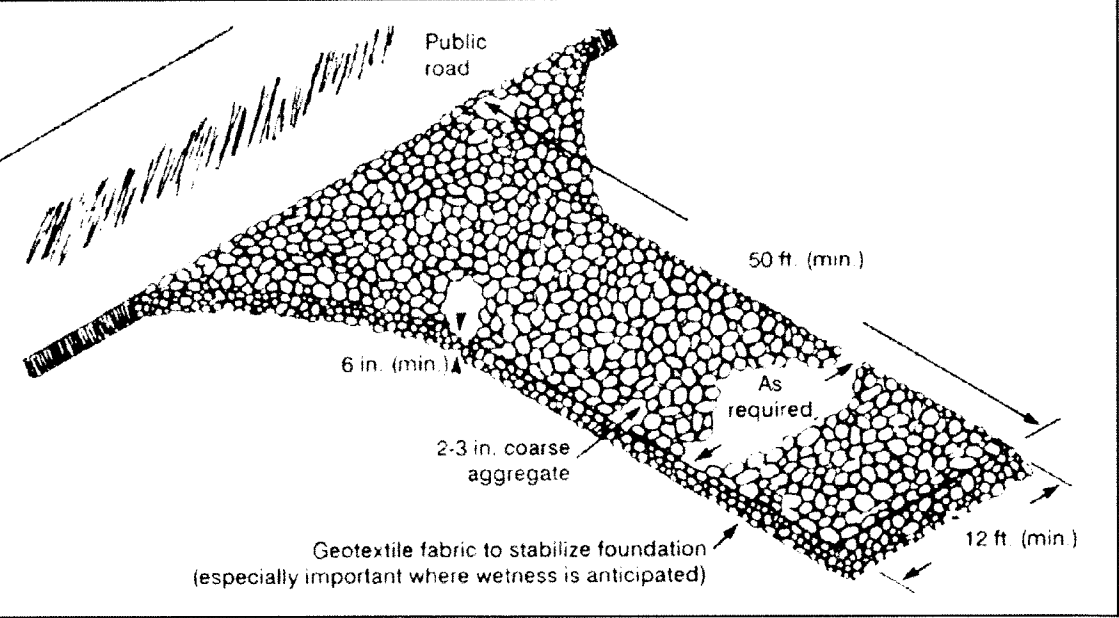
Width: 12 feet minimum or full width of entrance
Length: 50 feet minimum
Material: 2-3 inch diameter washed stone (INDOT CA No. 2), with Geotextile Fabric Underliner.
Thickness: 6 inch minimum

Installation:

- Remove all vegetation and other objectionable material from the foundation area.
- Install pipe under the stone if needed to provide proper public road drainage.
- Install Geotextile fabric on the graded foundation area prior to stone placement.
- Divert all surface runoff and drainage from the stone to sediment trap.

Maintenance:

- Inspect entrance pad for sediment deposits weekly and after storm events or heavy use.
- Reshape pad as needed for drainage and runoff control.
- Topdress with clean stone as needed.
- Remove mud and sediment tracked or washed onto public road by brushing or sweeping. No flushing of sediment off the street.
- Repair any broken road pavement immediately.



Plans of a temporary gravel construction entrance/exit pad.

TEMPORARY SEEDING

(Practice 3.11)

Purpose: To stabilize disturbed areas especially along both sides of the streets and courts after final grading work is completed and where additional work is not scheduled.

Requirements:

Site and seedbed preparation: Graded, and lime and fertilizer applied

Seed Selected:

Selected on the basis of quick germination, growth, and time of year, see Table for temporary seeding recommendations.

Fertilize:

According to soil test or use 600 lbs/acre 12-12-12 analysis or equivalent.

Mulch:

1.5 - 2 tons/acre straw. Straw must be dry, unchopped and free of undesirable seeds.

Application:

- Fertilize and lime as recommended by the soil test.
- Till the soil to obtain a uniform seedbed, working the fertilizer and lime into the soil 2-4" deep with a disk or rake operated across the slope.
- Apply seed uniformly with a drill or cultipacker-seeder, or by broadcasting, and cover to a depth as shown on Table for temporary seeding recommendations.
- If drilling or broadcasting, firm the seedbed with a roller or cultipacker.
- Mulch all seeded areas. (Note: If seeding is done with a hydroseeder, fertilizer and mulch can be applied with the seed in a slurry mixture.)

Maintenance:

- Inspect periodically after planting to see that vegetative stands are adequately established; re-seed if necessary.
- Check for erosion damage after storm events and repair; re-seed and mulch if necessary.

Notes:

- Vegetative Filter Strip: permanent or temporary, (in accordance with Practice 3.73) shall be done on all disturbed areas along both sides of the streets and courts to reduce erosion where additional work is not scheduled.
- Permanent Seeding: (in accordance with Practice 3.12) or sodding (in accordance with Practice 3.14) shall be done by individual homeowners at the time of final landscaping of their individual lots.

Exhibit 3.11-B. Temporary Seeding Recommendations.			
Seed species*	Rate/acre	Planting depth	Optimum dates**
Wheat or rye	150 lbs.	1 to 1½ in.	9/15 to 10/30
Spring oats	100 lbs.	1 in.	3/1 to 4/15
Annual ryegrass	40 lbs.	1/4 in.	3/1 to 5/1
			8/1 to 9/1
German millet	40 lbs.	1 to 2 in.	5/1 to 6/1
Sudangrass	35 lbs.	1 to 2 in.	5/1 to 7/30
* Perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than a year (Practice 3.12).			
** Seeding done outside the optimum dates increases the chances of seeding failure.			

PERMANENT SEEDING

(Practice 3.12)

Purpose: To stabilize disturbed areas especially along both sided of the streets and courts after final grading work is completed and where additional work is not scheduled.

Requirements:

Site and seedbed preparation: Graded, and lime and fertilizer applied.

Seed Selected:

Selected on the basis of Site Conditions, Soil PH, intended land use, and expected level of maintenance see Table for permanent seeding recommendations.

Fertilize:

According to soil test or use 600 lbs/acre 12-12-12 analysis or equivalent.

Mulch:

1.5 - 2 tons/acre straw. Straw must be dry, unchopped and free of undesirable seeds.

Application:

- Fertilize and lime as recommended by soil test.
- Till the soil to obtain a uniform seedbed, working the fertilizer and lime into the soil 2-4" deep with a disk or rake operated across the slope.
- Apply seed uniformly with a drill or cultipacker-seeder, or broadcasting, and cover to a depth of ¼ to ½ inch.
- If drilling or broadcasting, firm the seedbed with a roller or cultipacker.
- Mulch all seeded areas. (Note: If seeding is done with a hydroseeder, fertilizer and mulch can be applied with the seed in a slurry mixture.)

Maintenance:

- Inspect periodically, especially after storm events, until the stand is successfully established. (Characteristics of a successful stand include: vigorous dark green or bluish-green seedling; uniform density with nurse plants, legumes, and grasses well intermixed; green leaves; and the perennials remaining green throughout the summer, at least at the plant base.)
- Plan to add fertilizer the following seasons according to soil test recommendations.
- Repair damaged, bare or sparse areas by filling any gullies, refertilizing, over- or re-seeding, and mulching.
- If plant cover is sparse or patchy, review the plant materials chosen, soil fertility, moisture condition, and mulching; then repair the affected area either by over-seeding or by re-seeding, and mulching.
- If vegetation fails to grow, consider soil testing to determine acidity or nutrient deficiency problems. (Contact your SWCD or Cooperative Extension office for assistance.)
- If additional fertilization is needed to get a satisfactory stand, do so according to soil test recommendations.

Notes:

- Permanent seeding optimum dates are March 1 to May 10 and August 10 to September 30, seeding done between May 10 to August 10 may require irrigation. Temporary seeding may be used as an alternative until preferred date for Permanent Seeding. Retention/Detention area walls and base will be seeded as soon as possible using permanent seeding when possible, mulch or erosion control blankets are to be used on seeded areas to protect the soil from wind and water impact. Install silt fences around Retention/Detention area until seed is established.

Notes:

1. Permanent seeding optimum dates are March 1 to May 10 and August 10 to September 30, seeding done between May 10 to August 10 may require irrigation. Temporary seeding may be used as an alternative until preferred date for Permanent Seeding.
2. Retention/Detention area walls and base will be seeded as soon as possible using permanent seeding when possible, much or erosion control blankets are to be used on seeded areas to protect the soil from wind and water impact. Install silt fences around Retention/Detention area until seed is established.

Exhibit 3.12-C. Permanent Seeding Recommendations.

This table provides several seeding options. Additional seed species and mixtures are available commercially. When selecting a mixture, consider site conditions, including soil properties (e.g., soil pH and drainage), slope aspect and the tolerance of each species to shade and droughtiness.

Seed species and mixtures	Rate per acre	Optimum soil pH
OPEN AND DISTURBED AREAS (REMAINING IDLE MORE THAN 1 YR.)		
1. Perennial ryegrass	35 to 50 lbs.	5.6 to 7.0
+ white or ladino clover*	1 to 2 lbs.	
2. Kentucky bluegrass	20 lbs.	5.5 to 7.5
+ smooth bromegrass	10 lbs.	
+ switchgrass	3 lbs.	
+ timothy	4 lbs.	
+ perennial ryegrass	10 lbs.	
+ white or ladino clover*	1 to 2 lbs.	
3. Perennial ryegrass	15 to 30 lbs.	5.6 to 7.0
+ tall fescue**	15 to 30 lbs.	
4. Tall fescue**	35 to 50 lbs.	5.5 to 7.5
+ ladino or white clover*	1 to 2 lbs.	
STEEP BANKS AND CUTS, LOW MAINTENANCE AREAS (NOT MOWED)		
1. Smooth bromegrass	25 to 35 lbs.	5.5 to 7.5
+ red clover*	10 to 20 lbs.	
2. Tall fescue**	35 to 50 lbs.	5.5 to 7.5
+ white or ladino clover*	1 to 2 lbs.	
3. Tall fescue**	35 to 50 lbs.	5.5 to 7.5
+ red clover*	10 to 20 lbs.	
(Recommended north of US 40)		
4. Orchardgrass	20 to 30 lbs.	5.6 to 7.0
+ red clover*	10 to 20 lbs.	
+ ladino clover*	1 to 2 lbs.	
5. Crownvetch*	10 to 12 lbs.	5.6 to 7.0
+ tall fescue**	20 to 30 lbs.	
(Recommended south of US 40)		
LAWNS AND HIGH MAINTENANCE AREAS		
1. Bluegrass	105 to 140 lbs.	5.5 to 7.0
2. Perennial ryegrass (turf-type)	45 to 60 lbs.	5.6 to 7.0
+ bluegrass	70 to 90 lbs.	
3. Tall fescue (turf-type)**	130 to 170 lbs.	5.6 to 7.5
+ bluegrass	20 to 30 lbs.	
CHANNELS AND AREAS OF CONCENTRATED FLOW		
1. Perennial ryegrass	100 to 150 lbs.	5.6 to 7.0
+ white or ladino clover*	1 to 2 lbs.	
2. Kentucky bluegrass	20 lbs.	5.5 to 7.5
+ smooth bromegrass	10 lbs.	
+ switchgrass	3 lbs.	
+ timothy	4 lbs.	
+ perennial ryegrass	10 lbs.	
+ white or ladino clover*	1 to 2 lbs.	
3. Tall fescue**	100 to 150 lbs.	5.5 to 7.5
+ ladino or white clover*	1 to 2 lbs.	
4. Tall fescue**	100 to 150 lbs.	5.5 to 7.5
+ Perennial ryegrass	15 to 20 lbs.	
+ Kentucky bluegrass	15 to 20 lbs.	

NOTE: An oat or wheat companion or nurse crop may be used with any of the above permanent seeding mixtures. If so, it is best to seed during the fall seeding period, especially after Sept. 15, and at the following rates: spring oats—1/4 to 3/4 bu./acre; wheat—no more than 1/2 bu./acre.

DORMANT AND FROST SEEDING

(Practice 3.13)

Purpose:

- To provide early germination and soil stabilization in the spring.
- To reduce sediment runoff to downstream areas.
- To repair previous seedings.

Requirements:

Site and seedbed preparation: Graded, lime and fertilizer applied.

Seed Selected:

Selected on the basis of Site Conditions, Soil PH, intended land use, and expected level of maintenance. See Table for dormant or frost seeding recommendations.

Fertilize:

According to soil test or use 400-600 lbs/acre 12-12-12 analysis or equivalent.

Application:

Dormant seeding is a temporary or permanent seeding application at a time when soil temperatures are too low for germination to occur (less than 50 °F) Frost seeding is a temporary or permanent seeding application in early spring when soils are in the freeze-thaw stage.

For Dormant Seeding: (Seeding dates: Dec. 1-Feb. 28)

- Site preparation and mulching can be done months ahead of actual seeding, apply mulch upon completion of grading (Practice 3.15)
- Broadcast fertilizer as recommended by soil test.
- Broadcast seeding on top of the mulch and/or into existing ground cover at the rate shown on table. (if site preparation occurs within the recommended dates, fertilize and lime, seed, and mulch at the time.)

For Frost Seeding: (Seeding dates: Feb. 28 - Mar. 28)

- Broadcast fertilizer as recommended by a soil test.
- Select an appropriate seed species or mixture from table for temporary seeding or table for permanent seeding, and broadcast on to the seedbed or into the existing ground cover at the rate shown. (Do not work the seed into the soil.)

Maintenance:

- Apply 200-300 lbs./acre of 12-12-12 or equivalent fertilizer between Apr. 15 and May 10 or during periods of vigorous growth.
- Re-seed and mulch any areas that have inadequate cover by mid- to late April. For best results, re-seed within the recommended dates shown in Practices 3.11 for temporary seeding or 3.12 for permanent seeding.

Exhibit 3.13-B. Temporary Dormant or Frost Seeding Recommendations.	
Seed species*	Rate per acre
Wheat or rye	150 lbs.
Spring oats	150 lbs.
Annual ryegrass	60 lbs.

* Perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than a year (Practice 3.12)

Exhibit 3.13-C. Permanent Dormant or Frost Seeding Recommendations.		
<i>This table provides several seeding options. Additional seed species and mixtures are available commercially. When selecting a mixture, consider site conditions, including soil properties (e.g., soil pH and drainage), slope aspect and the tolerance of each species to shade and droughtiness.</i>		
Seed species and mixtures	Rate per acre	Optimum soil pH
OPEN AND DISTURBED AREAS (REMAINING IDLE MORE THAN 1 YR.)		
1. Perennial ryegrass	50 to 75 lbs.	5.6 to 7.0
+ white or ladino clover*	1½ to 3 lbs.	
2. Kentucky bluegrass	30 lbs.	5.5 to 7.5
+ smooth bromegrass	15 lbs.	
+ switchgrass	5 lbs.	
+ timothy	6 lbs.	
+ perennial ryegrass	15 lbs.	
+ white or ladino clover*	1½ to 3 lbs.	
3. Perennial ryegrass	22 to 45 lbs.	5.6 to 7.0
+ tall fescue**	22 to 45 lbs.	
4. Tall fescue**	50 to 75 lbs.	5.5 to 7.5
+ ladino or white clover*	1½ to 3 lbs.	
STEEP BANKS AND CUTS, LOW MAINTENANCE AREAS (NOT MOWED)		
1. Smooth bromegrass	35 to 50 lbs.	5.5 to 7.5
+ red clover*	15 to 30 lbs.	
2. Tall fescue**	50 to 75 lbs.	5.5 to 7.5
+ white or ladino clover*	1½ to 3 lbs.	
3. Tall fescue**	50 to 75 lbs.	5.5 to 7.5
+ red clover*	15 to 30 lbs.	
(Recommended north of US 40)		
4. Orchardgrass	30 to 45 lbs.	5.6 to 7.0
+ red clover*	15 to 30 lbs.	
+ ladino clover*	1½ to 3 lbs.	
5. Crownvetch*	15 to 18 lbs.	5.6 to 7.0
+ tall fescue**	30 to 45 lbs.	
(Recommended south of US 40)		
LAWNS AND HIGH MAINTENANCE AREAS		
1. Bluegrass	160 to 210 lbs.	5.5 to 7.0
2. Perennial ryegrass (turf-type)	70 to 90 lbs.	5.6 to 7.0
+ bluegrass	105 to 135 lbs.	
3. Tall fescue (turf-type)**	195 to 250 lbs.	5.6 to 7.5
+ bluegrass	30 to 45 lbs.	
CHANNELS AND AREAS OF CONCENTRATED FLOW		
1. Perennial ryegrass	150 to 225 lbs.	5.6 to 7.0
+ white or ladino clover*	1½ to 3 lbs.	
2. Kentucky bluegrass	30 lbs.	5.5 to 7.5
+ smooth bromegrass	15 lbs.	
+ switchgrass	5 lbs.	
+ timothy	6 lbs.	
+ perennial ryegrass	15 lbs.	
+ white or ladino clover*	1½ to 3 lbs.	
3. Tall fescue**	150 to 225 lbs.	5.5 to 7.5
+ ladino or white clover*	1½ to 3 lbs.	
4. Tall fescue**	150 to 225 lbs.	5.5 to 7.5
+ Perennial bluegrass	22 to 30 lbs.	
+ Kentucky bluegrass	22 to 30 lbs.	

* For best results: (a) legume seed should be inoculated; (b) seeding mixtures containing legumes should preferably be spring-seeded, although the grass may be fall-seeded and the legume frost-seeded; and (c) if legumes are fall-seeded, do so in early fall.

** Tall fescue provides little cover for, and may be toxic to, some species of wildlife. The IDNR recognizes the need for additional research on alternatives to tall fescue, such as buffalograss, orchardgrass, smooth bromegrass, and switchgrass. This research, in conjunction with demonstration areas, should focus on erosion control characteristics, wildlife toxicity, turf durability, and drought resistance.

NOTE: If using mixtures other than those listed here, increase the seeding rate by 50% over the conventional rate.

MULCHING

(Practice 3.15)

Purpose: To promote seed germination and seedling growth, a temporary surface stabilization, and protecting the soil from wind and water impact.

Requirements:

Material: Straw, hay, wood fiber or excelsior, see table for Mulch Materials, Rates, and comments.

Comments:

Coverage: 75% of the soil surface
Anchoring: Required to prevent displacement by wind or water, see table for Mulch Anchoring Methods.

Application:

- Apply mulch at the recommended rate.
- Spread uniformly by hand, hay fork, mulch blower, or hydromulcher with no more than 25% of the surface visible.
- Anchor immediately if using straw or hay, using one of the following methods:
 - Crimp with mulch anchoring tool.
 - Hydromulch with short cellulose fibers.
 - Apply liquid tackifier.
 - Cover with netting secured with metal staples.

Exhibit 3.15-B. Mulch Materials, Rates, and Comments.		
Material	Rate	Comments
Straw or hay	1½-2 tons/acre	Should be dry, unchopped, free of undesirable seeds. Spread by hand or machine. Must be crimped or anchored (see Exhibit 3.15-D).
Wood fiber or cellulose	1 ton /acre	Apply with a hydromulcher and use with tackling agent.
Long fiber wood (excelsior)	1/2-3/4 ton/acre	Anchor in areas subject to wind.

Exhibit 3.15-D. Mulch Anchoring Methods.

Anchoring method	How to apply
Mulch anchoring tool OR Farm disk (dull, serrated, and set straight)	Crimp or punch the straw or hay into the soil 2-4 in. Operate machinery on the contour of the slope.
Cleating with dozer tracks	Operate dozer up and down slope, not across, or else the tracks will form rills.
Wood hydromulch fibers	Apply 1-2 tons/acre using a hydromulcher at a rate of 750 lbs./acre with a tackling agent (or according to contractor specifications). Do not use in areas of concentrated flow.
Asphalt emulsion	Emulsified asphalt should conform to the requirements of ASTM Spec. #977. Apply with suitable equipment at a rate of 0.05 gal./sq. yd. Do not use in areas of concentrated flow.
Synthetic tackifier, binder or soil stabilizer	Apply according to manufacturer's recommendation.
Biodegradable netting (polypropylene or similar material)*	Apply over mulch and staple with 6-8 in. wire staples. Follow manufacturer's recommendations for installation. Best suited to slope application.

* Install the netting immediately after applying the mulch. In areas of concentrated water flow, lay it parallel to the direction of flow; on other slopes, lay it either parallel or perpendicular to direction of flow. Edges of adjacent netting strips should overlap 4-6 in., with the strip on the upgrade side of any lateral water flow on top. Installation details are site specific, so follow manufacture's directions.

RIPRAP

(Practice 3.16)

Purpose: To protect slopes, stream banks and channels, which are subject to erosion by water.

Requirements:

Rock: Hard, angular, weather-resistant and well graded stone, the largest pieces should not exceed two times the specified stone diameter.
Thickness: Two times the specified stone diameter but not greater than 3 inches.
Filter: Under permanent riprap install geotextile fabric for stabilization and filtration.

Installation:

Subgrade Preparation:

- Remove brush, trees, stumps, and other debris.
- Excavate only deep enough for both filter and riprap.
- Cut a keyway in stable material at the base of the slope to reinforce the toe;

Filter Placement:

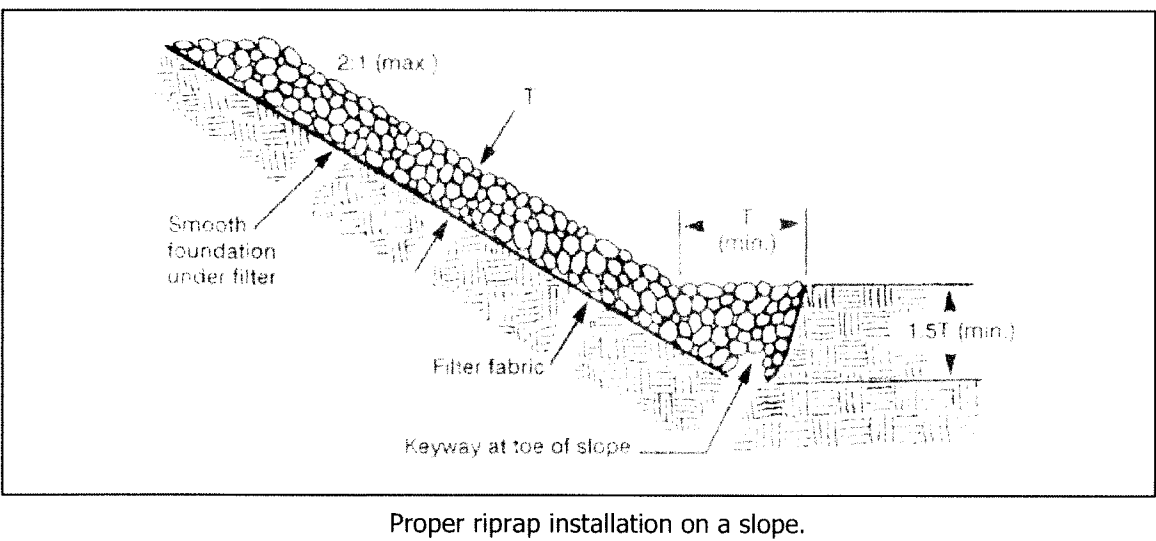
- Place geotextile fabric on a smoothed foundation, overlap the edges at least 12 inches and secure with anchor pins spaced every 3 feet along the overlap.

RipRap Placement:

- Immediately after installing the filter, add the riprap to full thickness in one operation.
- If fabric is damaged, remove the riprap and repair by adding another layer of fabric, overlapping the damaged area by 12 inches.
- Place smaller rock in voids to form a dense, uniform, well-graded mass.

Maintenance:

- Inspect periodically for displaced rock material, slumping, and erosion at edges, especially downstream or downslope.



Proper riprap installation on a slope.

EROSION CONTROL BLANKET (SURFACE-APPLIED)

(Practice 3.17)

Purpose: To prevent erosion by protecting the soil from rainfall impact, overland water flow, concentrated runoff, or wind.
To conserve moisture and increase seed germination and seedling growth.

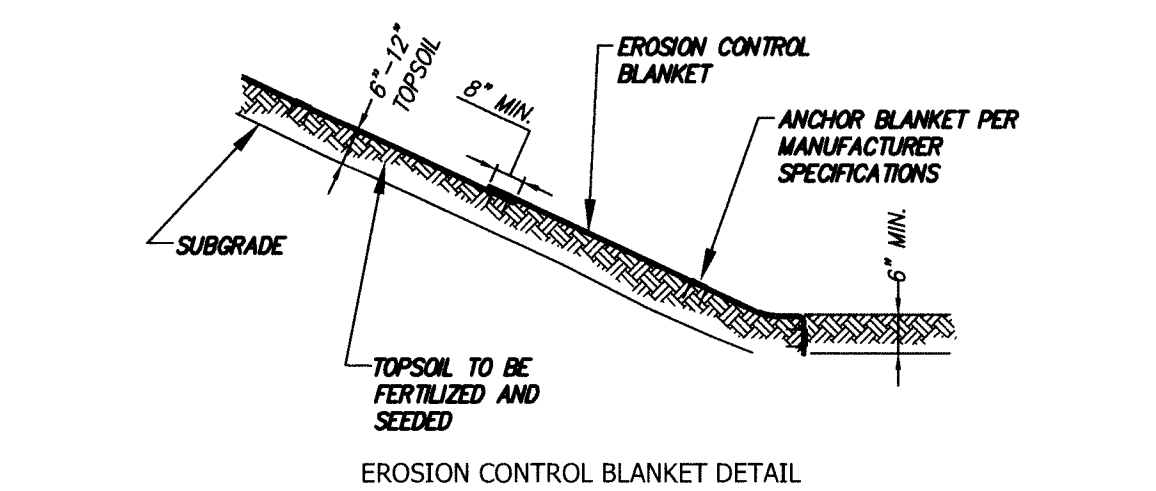
Requirements: **Material:** Either an organic (straw, excelsior, woven paper, coconut, fiber, etc.) or a synthetic mulch incorporated into a polypropylene or similar netting material. It may be biodegradable, photodegradable or permanent.
Anchoring: Use of staples or stakes to prevent movement of displacement.

Installation:

- Grade the site as specified in the construction plan.
- Add topsoil where appropriate.
- Prepare the seedbed, fertilize and seed the area immediately after grading.
- Following manufacturer's directions, lay the blankets on the seeded area such that they are in continuous contact with the soil and that the upslope or upstream ones overlap the lower ones by at least 8 inches.
- Tuck the uppermost edge of the upper blankets into a check slot (slit trench), backfill with the soil, and tamp down.
- Anchor the blankets as specified by the manufacturer by driving 6-8 in. metal staples into the ground in a pattern determined by the site conditions.

Maintenance:

- During vegetative establishment, inspect after storm events for any erosion below the blanket.
- If any area shows erosion, pull back that portion of the blanket covering it, add soil, re-seed the area, and re-lay and staple the blanket.
- After vegetative establishment, check the treated area periodically.



EROSION CONTROL BLANKET DETAIL

GRASS LINED CHANNEL

(Practice 3.31)

Purpose: To carry concentrated runoff from a small watershed area to a stable outlet without damage from erosion or flooding.

Requirements:

See Channel Cross Section Detail

Seed:

Turf type tall fescue 300-350 lbs/acre
Wheat 1/2 bushel/acre

Fertilizer:

Fertilize according to soil test. If testing is not done, use 600 lbs./acre of 12-12-12 analysis or equivalent fertilizer.

Mulch:

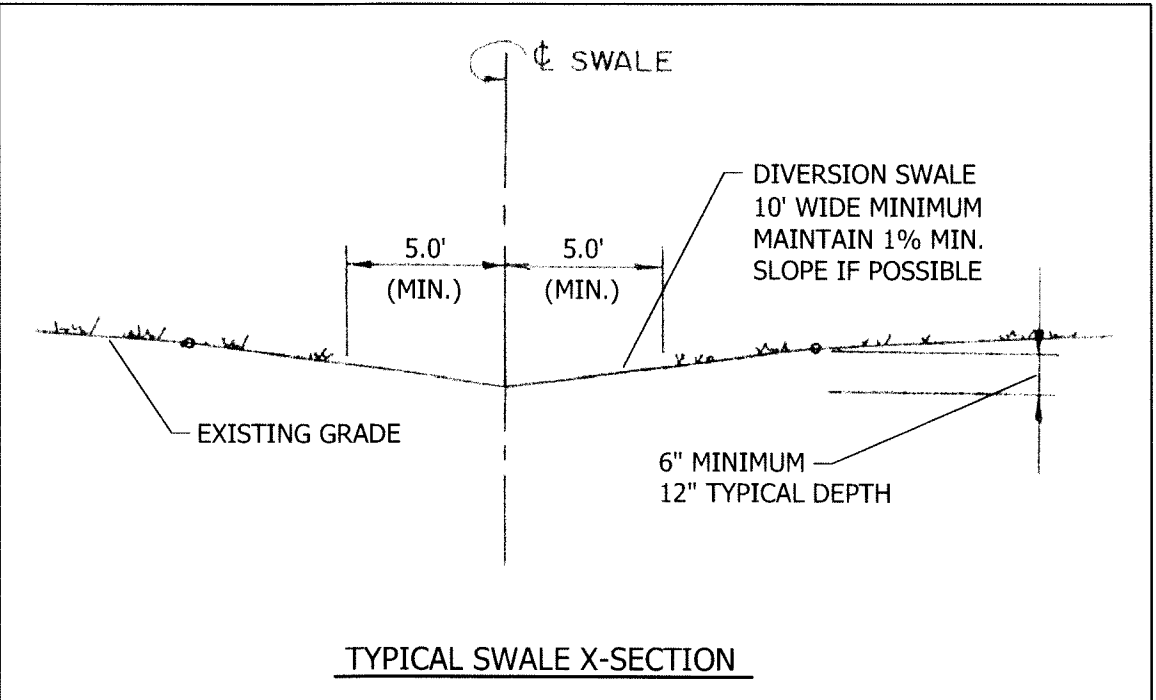
Straw - 1.5-2 tons/acre: Should be dry, unchopped, free of undesirable seeds. Must be crimped or anchored, and cover 75 % of the soil surface.

Installation:

- Remove all vegetation, brush, trees and other debris from the channel area and dispose of property.
- Excavate and shape the channel to dimensions shown on the plans, dispose of excess soil so surface can enter the channel freely.
- Add topsoil where the soils exposed during excavation would be unsuitable for grass species.
- Till the soil to obtain uniform seedbed, working the fertilizer into the soil.
- Sod or apply seed uniformly with a drill or cultipacker-seeder or by broadcasting, and cover to a depth of 1/4 inch.
- Mulch sides of channel with straw, as required by Practice 3.15.

Maintenance:

- Inspect the channel following storm events during and after vegetative establishment, repair and reseed as needed.
- Check the channel outlet for blockage, sediment and make repairs.
- Remove significant sediment and debris from the channel to maintain design cross section and grade.



TYPICAL SWALE X-SECTION



TORRENGA ENGINEERING, INC.

CONSULTING ENGINEERS & LAND SURVEYORS

907 RIDGE ROAD, MUNSTER, INDIANA 46321

Tel. No.: (219) 896-8918

website: www.torrenge.com

~ Tuckahoe Development ~

Munster, Lake County, Indiana

SOIL EROSION DETAILS 1

CLIENT: Tuckahoe Homes 2500 North Highland Drive Ste. A Highland, Indiana 46322

REVISIONS: 06-25-2013 09/09/2007

JOB NO: 5129-2006 SCALE: As shown

SHEET 8 OF 9

ROCK CHUTE

(Practice 3.41)

Purpose: To protect slopes, stream banks and channels, which are subject to erosion. Where run off velocity is great, at the outlet pipe of a detention basin, channel or culvert.

Requirements:

Rock: Hard angular, weather-resistant and well graded stone, the largest pieces should not exceed two times the specified stone diameter.

Thickness: 12" minimum or two times the specified stone diameter, which ever is greater.

Filter: Under permanent riprap install geotextile fabric for stabilization and filtration

Installation:**Subgrade Replacement:**

1. Remove brush, trees, stumps, and other debris.
2. Excavate only deep enough for both filter and riprap.

Filter Placement:

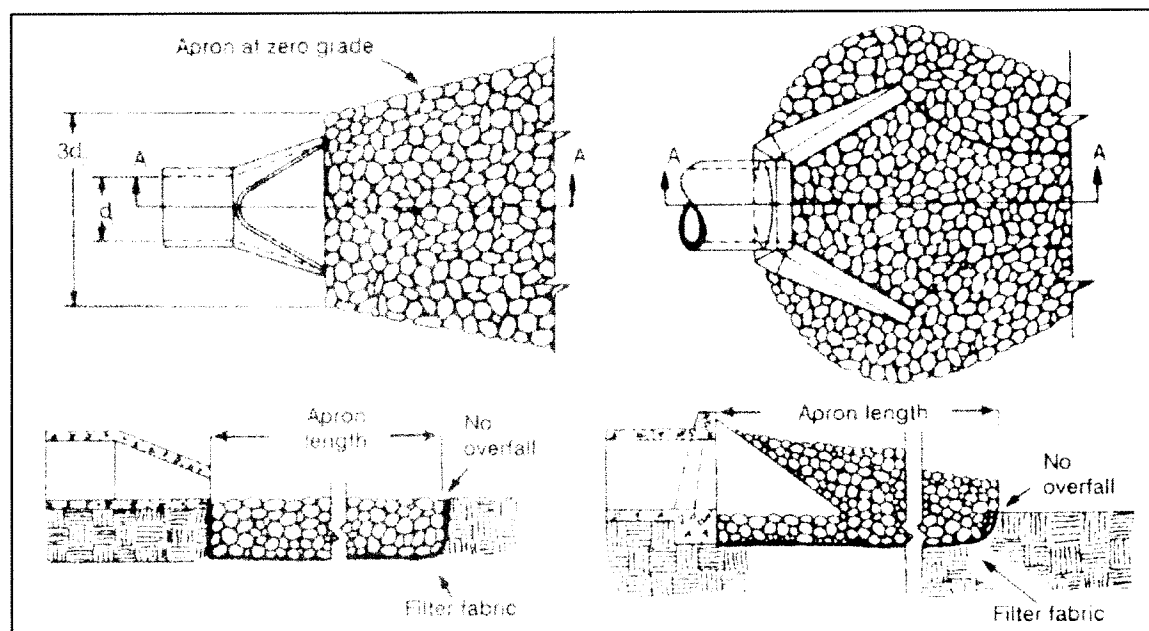
1. Place geotextile fabric on a smoothed foundation, overlap the edges at least 12 inches and secure with anchor pins spaced every 3 feet along the overlap.
2. If fabric is damaged, remove the riprap and repair damaged area by 12 inches.

RipRap Replacement:

1. Immediately after installing the filter, add the riprap to full thickness in one operation to the design elevation, and extend riprap to the top of the bank.
2. Place smaller rock in voids to form a dense, uniform, well-graded mass.
3. Blend the riprap smoothly to the surrounding grade.
4. Stabilize all disturbed areas immediately following installation.

Maintenance:

1. Inspect periodically for displaced rock material, slumping, and erosion at edges, especially down stream or down slope.



Pipe outlet aprons for a channel (left) that is not well defined and (right) that is well defined.

FABRIC DROP INLET PROTECTION

(Practice 3.52)

Purpose: To capture sediment at the entrance to a storm drain, allowing full use of the storm drain system during the construction period.

Requirements:

Contributing Area: 1 acre maximum.
Capacity: Runoff from 2-yr, 24-hr. Storm without bypass flow.
Fabric material: Geotextile fabric for filtration.
Height of fabric: 1 to 1-1/2 ft., measured from top of inlet.
Approach: Pool area flat (less than 1% slope) with sediment storage of 945 cu.ft./acre disturbed.
Stability: Structure must withstand 1-1/2 ft. head of water and sediment without collapsing or undercutting.
Support posts: Steel fence post or 2 x 2 in. or 2 x 4 in. hard wood post, 3 ft. min. length, 3 ft. max. spacing; top of frame support recommended.
Cross bracing: tops of posts to opposite corners greatly strengthens support.

Installation:

1. To prevent runoff from bypassing the inlet, set top of the fabric at least 6" below the downslope ground elevation, or build a temporary dike (compacted to 6" higher than the fabric) on the low side of the inlet. (See Exhibit 3.52-C).
2. Cut the fabric from a single roll to eliminate joints. (Provide at least 2' of overlap if a joint is needed)
3. Bury the bottom of the fabric at least 1 ft. deep, backfill, and compact the backfill (See Exhibit 3.52-B).
4. Space the support posts evenly against the inlet perimeter a maximum of 3 ft. apart, and drive the about 1-1/2 ft. into the ground. (Overflow must fall directly into the inlet and not on unprotected soil.

Maintenance:

1. Inspect the fabric barrier after storm events, and make needed repairs immediately.
2. Remove sediment from the pool area to provide storage for the next storm. Avoid damaging or undercutting the fabric during sediment removal.
3. When the contributing drainage area has been stabilized, remove and properly dispose of all construction material and sediment, grade area to the elevation on the top of the inlet, then stabilize.

Note:

1. At owner's discretion Straw Bale Drop Inlet Protection (in accordance with Practice 3.54) may be substituted for this practice.

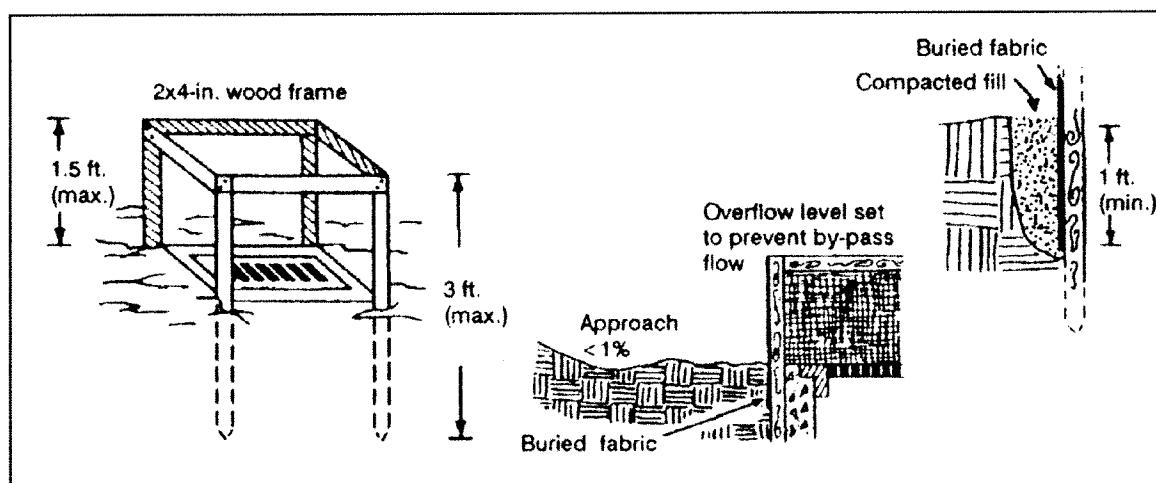


Exhibit 3.52-B. Support frame and installation of fabric.

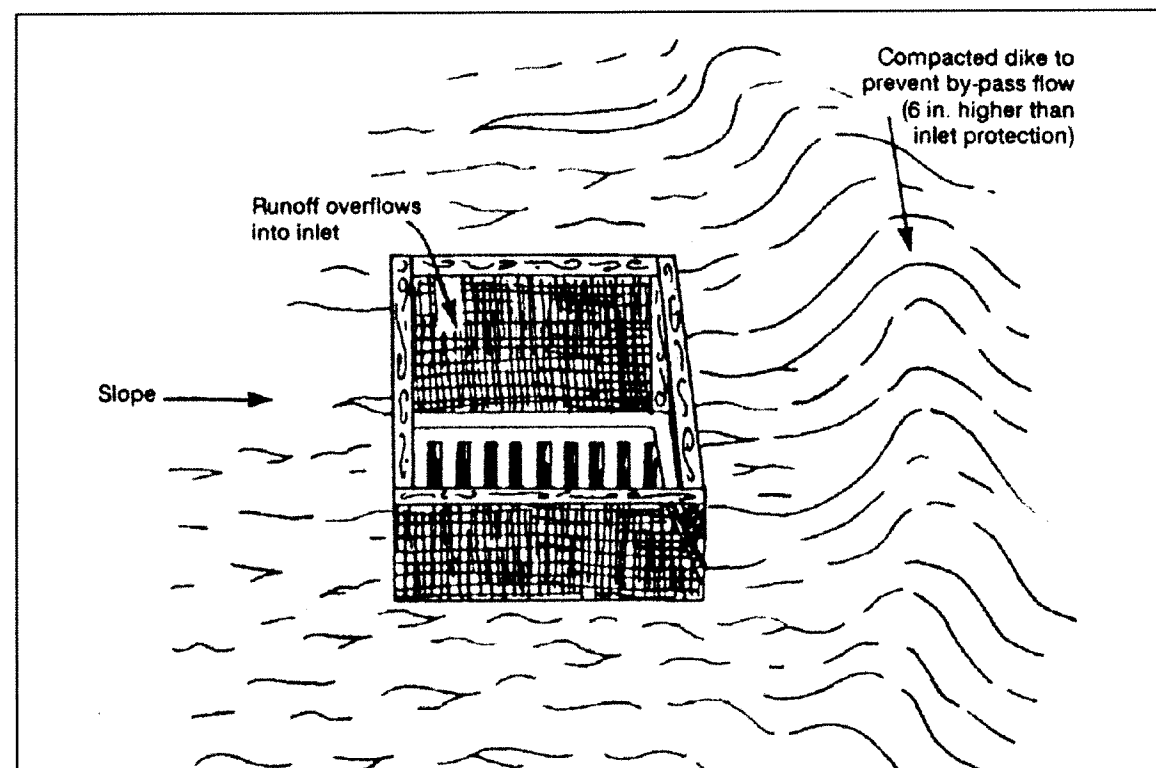


Exhibit 3.52-C. Prevent Bypass flow with temporary dike downslope of inlet.

BASKET CURB INLET PROTECTION

(Practice 3.63)

Purpose: To prevent excessive sediment from entering storm sewers at curb inlets, allowing full use of the storm drain system during the construction period.

Requirements:

Basket: Fabricated metal with top width-length dimensions such that the basket fits into the inlet without gaps, and line it with Geotextile fabric for filtration.

Installation:

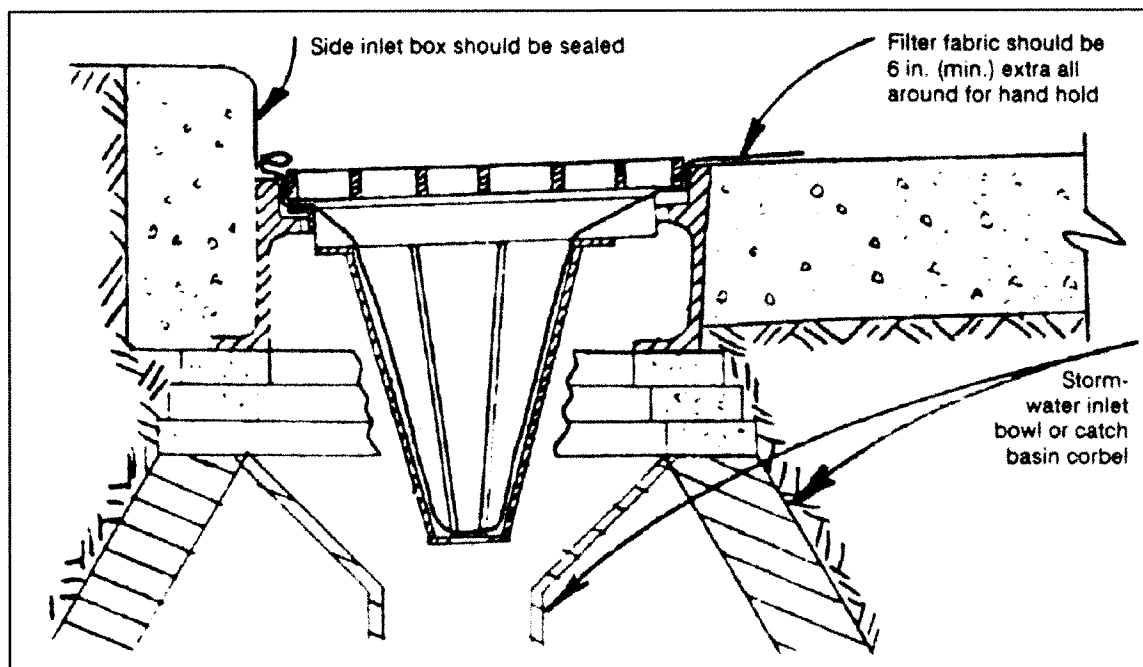
1. Install basket curb inlet protections as soon as inlet boxes are installed in a new development or before land disturbing activities begin in a stabilized area.
2. Remove the grate, and place the basket in the inlet.
3. Cut and install a piece of filter fabric large enough to line the inside of the basket and extend at least 6 in. beyond the frame.
4. Replace the inlet grate, which also serves to anchor the fabric.

Maintenance:

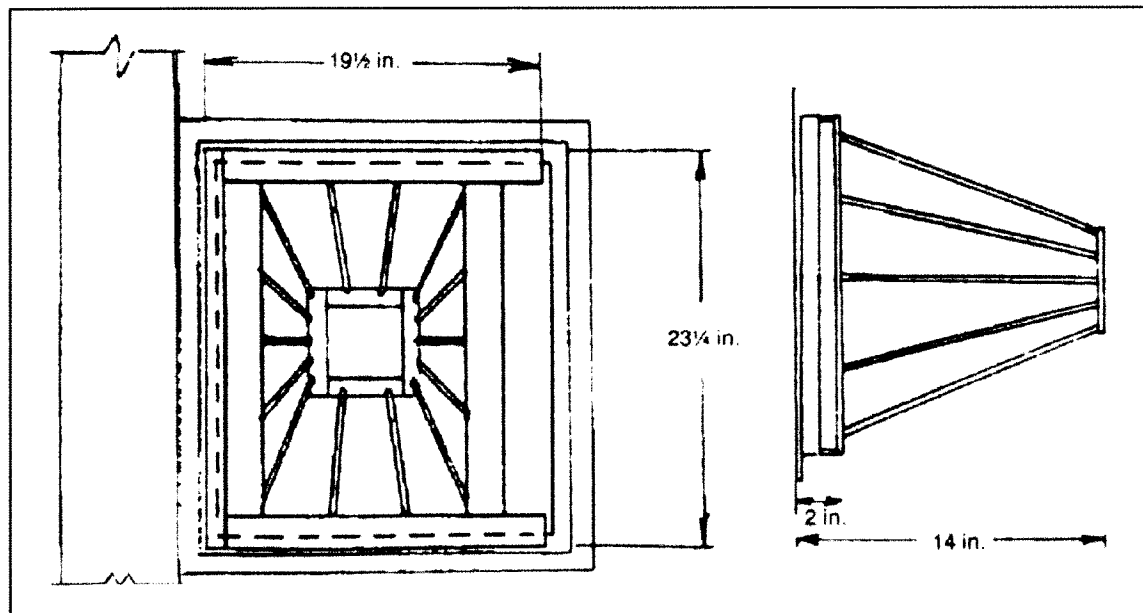
1. Inspect after each storm event
2. Remove built-up sediment and replace the Geotextile fabric after each storm event.

Note:

1. At owner's discretion, Sandbag Curb Inlet Sediment Barriers (in accordance with Practice 3.64) may be substituted for this practice.



Cross-sectional view of a basket curb inlet protection.



Top view (left) and front view (right) of a basket curb inlet protection.

SANDBAG CURB INLET SEDIMENT BARRIER

(Practice 3.64)

Purpose: To trap sediment on paved streets that receive relatively small runoff flows, preventing it from being transported further down the street or into an inlet.

Requirements:

Location: On curbed paved streets down grade from light construction activity.
Contributing Area: 1 acre maximum.
Capacity: Runoff from 2-yr, 24-hr. Storm without bypass flow.
Height: 1 to 3 layers of sandbags (as necessary).
Length: As needed to intercept runoff (3 ft. min.).
Traffic barricades: As needed to prevent vehicles from hitting the barrier. (optional)

Installation:

1. Fill bags approximately half full with sand or fine gravel.
2. Upslope from the curb inlet, lay bags tightly end to end in a row curving from the curb and away from the inlet.
3. Overlap the barrier onto the curb, and extend it a minimum of 3 ft. into the street to intercept the runoff.
4. If using more than one row, overlap bags with the row beneath, and leave a one-bag gap in the middle of the top row to serve as a spillway.
5. For additional storage capacity, construct a series of sandbag barriers along the curb so each one traps small amounts of sediment.

Maintenance:

1. Inspect frequently for damage by vehicular traffic, and repair if needed.
2. Inspect after each storm event.
3. Remove sediment (but not by flushing) when it reaches half the height of the barrier.
4. Deposit removed sediment where it will not enter storm drains.

Notes:

1. Trapping sediment at a curb inlet may be difficult if erosion/sediment control measures are not installed to reduce the volume of sediment reaching the inlet.
2. This practice can be used in conjunction with other curb inlet sediment controls.

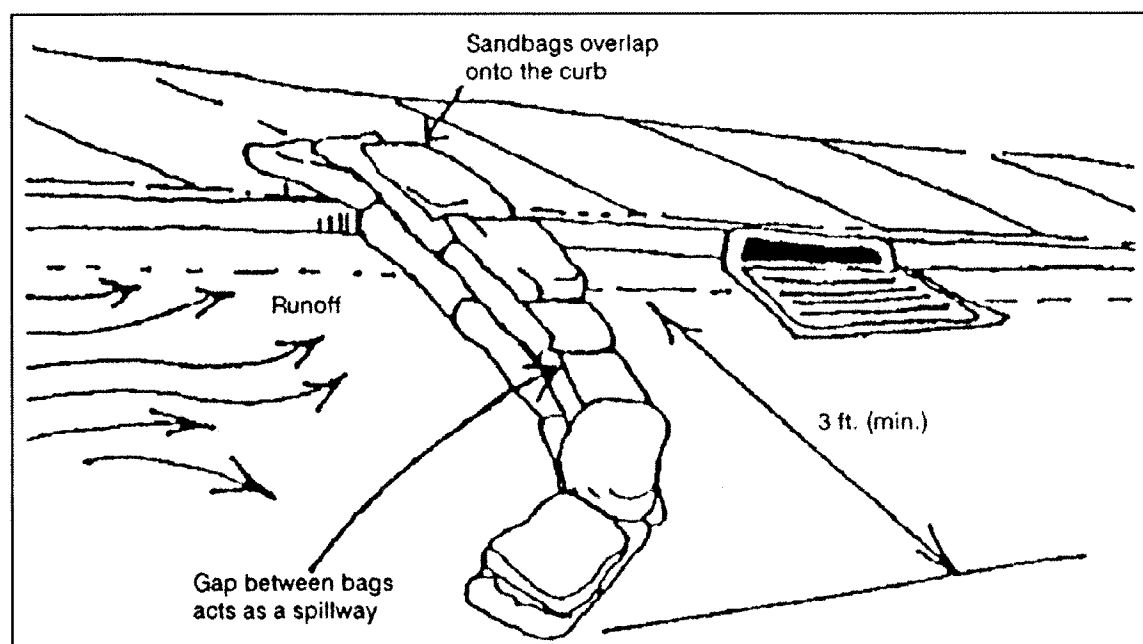


Exhibit 3.64-B. Detail of sandbag curb sediment barrier.

SILT FENCE

(Practice 3.74)

Purpose: To retain sediment from small sloping disturbed areas by reducing the velocity of sheet flow.

Requirements:

Trench: 8" minimum depth, flat bottom or v-shaped, filled with compacted soil or gravel to bury lower portion of support wire and/or fence fabric.

Support posts: 2" x 2" hardwood posts set at least 1 foot deep.

Spacing of Posts: 8-foot maximum if fence supported by wire, otherwise 6 foot for extra strength fabric without wire backing.

Fence height: A 3 feet minimum or high enough so depth of impounded water does not exceed 1.5 feet at any point along fence line.

Support wire : 14 gauge, 6" mesh wire fence. (needed if using standard-strength fabric (optional)

Fence Fabric: Woven or non-woven Geotextile fabric with specified filtering efficiency and tensile strength and containing UV inhibitors and stabilizers to ensure 6 months minimum life at temperatures 0-120 degrees F.

Installation:

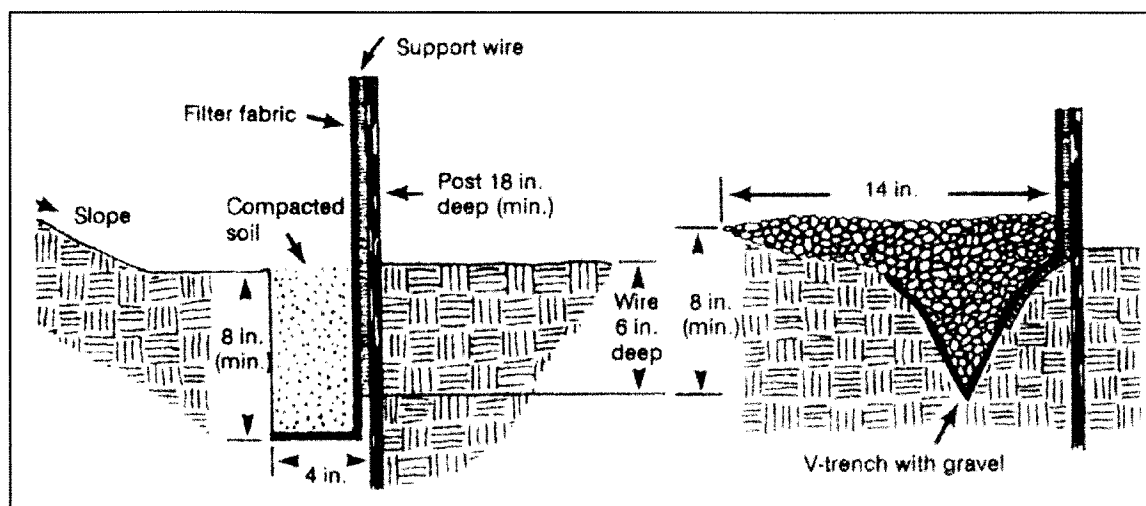
1. Along the entire intended fence line, maintain contour as much as possible, dig an 8" deep flat bottom or v-shaped trench.
2. On the downslope side of the trench, drive the post at least 1 foot into the ground. (Note: If the fence has pre-attached posts or stakes, drive them deep enough so the fabric is satisfactorily in the trench per step 6)
3. Fasten support wire fence to the upslope side of the posts, extending it 8" into trench. (use only if required by manufacturer)
4. Run a continuous length of Geotextile fabric along upslope side of posts.
5. If a joint is necessary, nail the overlap to the nearest post with a wood lath.
6. Place the bottom 1" of fabric in the 8" deep trench, extending the remaining 4" of fabric toward the upslope side.
7. Backfill the trench with compacted earth.

Maintenance:

1. Inspect silt fence periodically and after each storm event.
2. If fence fabric tears, starts to decompose, or becomes ineffective, replace the affected portion.
3. Remove deposited sediment when it reaches half the height of the fence at its lowest point or is causing the fabric to bulge.
4. Take care to avoid undermining the fence during clean out.
5. After watershed has been stabilized, remove fence and sediment deposits, bring the disturbed area to grade and stabilize.

Note:

1. At owner's discretion, Straw Bale Dam (straw bale filter) (in accordance with Practice 3.75) may be substituted for this practice.)



Detailed example of silt fence installation (showing flat-bottom and v-shaped trenches).

STEP 1 EVALUATE THE SITE.

Before construction, evaluate the entire site, marking for protection any important trees and associated rooting zones, unique areas to be preserved, on-site septic system absorption fields, and vegetation suitable for filter strips, especially in perimeter areas.

Identify Vegetation To Be Saved.

■ Select and identify the trees, shrubs, and other vegetation that you want to save (see "Vegetative Filter Strips" under Step 2 below).

Protect Trees and Sensitive Areas.

■ To prevent root damage, do not grade, burn, pile soil, fill, or park vehicles near trees or in areas marked for preservation.

■ Place plastic mesh or snow fence barriers around the tree's drip line to protect the area below their branches.

■ Place a physical barrier, such as plastic fencing, around the area designated for a septic system absorption field (if applicable).

STEP 2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS.

Identify the areas where sediment laden runoff could leave the construction site, and install perimeter controls to minimize the potential for off site sedimentation. It's important that perimeter controls are in place before any other earthmoving activities begin.

Protect Downslope Areas.

With Vegetative Filter Strips

■ On slopes of less than 6 percent, preserve a 20- to 30-foot wide vegetative buffer strip around the perimeter of the property, and use it as a filter strip for trapping sediment.

■ Do not mow filter strip vegetation shorter than 4 inches.

With Silt Fence

■ Use silt fencing along the perimeter of the lot's downslope side(s) to trap sediment.

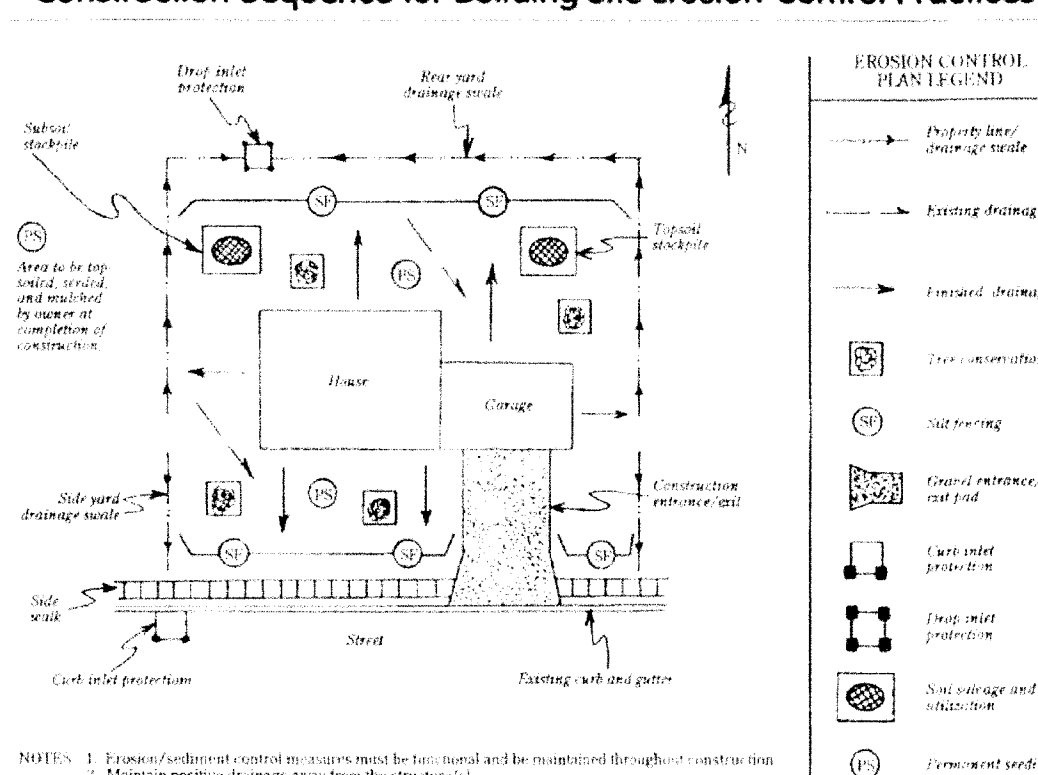
Install Gravel Drive.

■ Restrict all but access to the drive to prevent vehicles from tracking mud onto roadways.

Protect Storm Sewer Inlets.

■ Protect nearby storm sewer curb inlets with stone-filled or gravel-filled geotextile bags or equivalent measures to prevent disturbing soil.

■ Protect on-site storm sewer drop inlets with silt fence material, straw bales, or equivalent measures before disturbing soil.

Construction Sequence for Building Site Erosion Control Practices

Sample Erosion/Sediment Control Practice Plan for a Typical One- or Two-Family Dwelling Under Construction

NOTES: 1. Erosion/sediment control measures must be functional and be maintained throughout construction. 2. Maintain positive drainage away from the structure(s).

STEP 3. PREPARE THE SITE FOR CONSTRUCTION

Prepare the site for construction and for installation of utilities. Make sure all contractors (especially the excavating contractor) are aware of areas to be protected.

Subgrade and Stockpile the Topsoil/Subsoil.

■ Remove topsoil (typically the upper 4 to 6 inches of soil material) and stockpile.

■ Remove subsoil and stockpile separately from the topsoil.

■ Locate the stockpiles away from any downslope street, driveway, stream, lake, wetland, ditch, or drainage way.

■ Immediately after stockpiling, temporary seed the stockpiles with annual ryegrass or winter wheat or place soil seedment barriers around the perimeter of the piles.

STEP 4. BUILD THE STRUCTURE(S) AND INSTALL THE UTILITIES.

Construct the home and install the utilities; also install the sewage disposal system and drill the water well (if applicable), then consider the following:

Install Downspout Extenders.

■ Although not required, downspout extenders are highly recommended as a means of preventing lot erosion from roof runoff.

■ Add the extenders as soon as the gutters and downspouts are installed.

■ Be sure the extenders have a stable outlet, such as the street, sidewalk, or a well vegetated area.

STEP 5. MAINTAIN THE CONTROL PRACTICES

Maintain all erosion and sediment control practices until construction is completed and the lot is stabilized.

■ Inspect the control practices a minimum of twice a week and after each storm event, making any needed repairs immediately.

■ Toward the end of each work day, sweep or scrape up any soil tracked onto roadways. Do not flush areas with water.

■ By the end of the next work day after a storm event, clean up any soil washed off-site.

STEP 6. REVEGETATE THE BUILDING SITE

Immediately after all outside construction activities are completed, stabilize the lot with sod, seed, and/or mulch.

Redistribute the Stockpiled Subsoil and Topsoil.

■ Spread the stockpiled subsoil to rough grade.

■ Spread the stockpiled topsoil to a depth of 4 to 6 inches over roughgraded areas.

■ Fertilize and lime according to soil test results or recommendations of a seed supplier or a professional landscaping contractor.

Seed or Soil Bare Areas.

■ Contact local seed suppliers or professional landscaping contractors for recommended seeding mixtures and rates.

■ Follow recommendations of a professional landscaping contractor for installation of sod.

■ Water newly seeded/sodded areas every day or two to keep the soil moist. If no watering is needed once grass is 2 inches tall.

Mulch Newly Seeded Areas.

■ Spread straw mulch on newly seeded areas, using 1½ to 2 bales of straw per 1,000 square feet.

■ On flat or gently sloping land, anchor the mulch by ramping it 2 to 4 inches into the soil. On steep slopes, anchor the mulch with netting or tackifiers. An alternative to an anchored mulch would be the use of erosion control blankets.

STEP 7. REMOVE REMAINING TEMPORARY CONTROL MEASURES

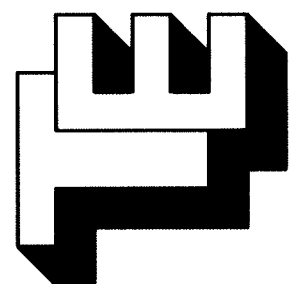
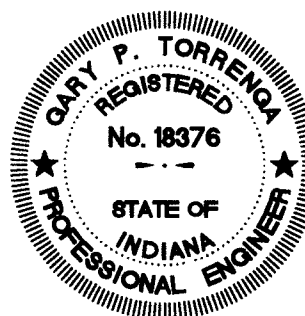
Once the soil and/or vegetation is well-established, remove any remaining temporary erosion and sediment control practices, such as:

■ Downspout extenders. (Or shorten to outlet onto the vegetated areas, allowing for maximum infiltration)

■ Storm sewer inlet protection measures.

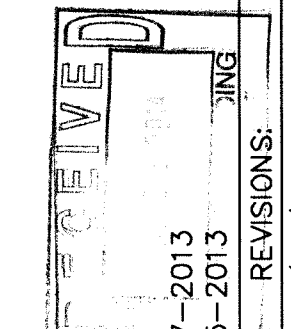
EROSION CONTROL PRACTICES**FOR INDIVIDUAL LOT**

NOTE: Erosion control measures shown on this detail are the responsibility of the developer. Each lot builder will be responsible for proper implementation of these items. The developer, as the permit holder is responsible to ensure these measures are in place.



TORRENCE ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
website: www.torrence.com
Tel. No.: (219) 836-8918

~ Tuckahoe Development ~
Munster, Lake County, Indiana
SOIL EROSION DETAILS 2



CLIENT: Howard Homes
2300 Rumblewood Drive Ste. A
Highland, Indiana 46322

JOB NO: 5129-2006
SCALE: As shown

DATE: 03/09/2007

REVISIONS: 1

REVISIONS: 1

REVISIONS: 1

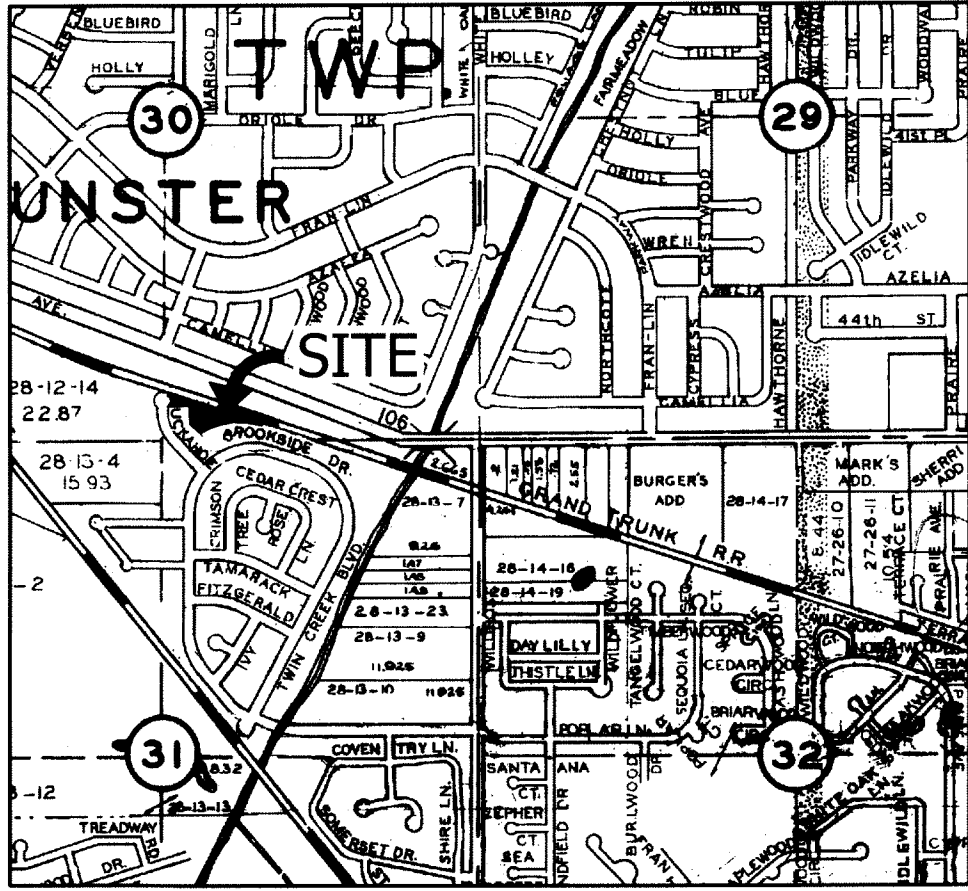
REVISIONS: 1

REVISIONS: 1

REVISIONS: 1

REVISIONS: 1

FLOOD STATEMENT:
As per the National Flood Insurance Rate Map, Community-Panel Number 180139 0003 B, Effective Date May 16, 1983, shown parcel appears to be in Zone "B", areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depth less than one (1) foot or where the contributing drainage area is less than one (1) square mile; or areas protected by levees from the base flood.



VICINITY MAP

~ Tuckahoe Development ~

A PLANNED UNIT DEVELOPMENT TO THE MUNSTER, LAKE COUNTY, INDIANA

LEGAL DESCRIPTION:
Being a parcel of land in the West half of the Southeast quarter of Section 30, Township 36 North, Range 9 West of the Second Principal Meridian more particularly described as follows: Beginning at the Northeast corner of Lot 1, Twin Creek, Block Five as shown in Plat Book 50, Page 29 in the Office of the Recorder of Lake County, Indiana; thence South 0 degrees 34 minutes 33 seconds West, a distance of 165.52 feet to the Southeast corner of Lot 2; thence North 70 degrees 45 minutes 05 seconds East, a distance of 16.70 feet; thence South 46 degrees 00 minutes 30 seconds East, a distance of 125.54 feet; thence Easterly along the North boundary of said Twin Creek, Block Five, being a curve concave to the South and having a radius of 740.00 feet (the chord of which curve bears North 86 degrees 43 minutes 44 seconds East, a distance of 578.09 feet), an arc distance of 593.90 feet; thence North 70 degrees 16 minutes 45 seconds West, along the Southwesterly right of way line of the Grand Trunk Railroad, a distance of 946.36 feet; thence Southerly along a curve concave to the West and having a radius of 60.00 feet (the chord of which bears South 9 degrees 34 minutes 14 seconds East, a distance of 104.65 feet), an arc distance of 127.14 feet; thence South 89 degrees 25 minutes 28 seconds East, along the North line of said Lot 1, a distance of 191.89 feet to the point of beginning, all in Munster, Lake County, Indiana.

UTILITY EASEMENTS:
An easement is hereby granted to the Town of Munster, Indiana, AT&T, Northern Indiana Public Service Company and other companies identified by the Munster Town Board as supplying public service needs severally and their respective successors and assigns to install, lay, erect, construct, renew, operate, repair, replace and maintain sewers, water mains, gas mains, conduits, cables, poles and wires, underground with all necessary braces, guys, anchors and other appliances, in, upon, along and over the strip or strips of land designated by dotted lines on the plat and marked "easements for public utilities" for the purpose of serving the public in general with sewer, water, gas, electric, telephone and television service, including aerial right as to streets where necessary with aerial service wires to adjacent lots, together with the right to enter upon the said easements for public utilities at all times for any and all of the purposes aforesaid and to trim and keep trimmed any trees, shrubs, or saplings that interfere with any such utility equipment. Any fences, trees, black toppings, vegetation improvements or other potential obstacles to the use of easements shown upon the subdivision plat shall be placed at the risk of the property owner and may be subject to removal in the event of any interference with the use of said easements or drainage of other lots. Changes of yard elevations in easements from those established upon the subdivision plat or noted on plats submitted and approved when building permits are issued that adversely impact drainage of adjoining lots shall be subject to regrading at the owner's expense. All designated utility easements are also hereby dedicated as drainage easements.

STATE OF INDIANA } §
COUNTY OF LAKE }

It, Tuckahoe Development, LLC, does hereby certify that it is the Owner of the real estate shown and described herein, and has of its own free will and accord caused the same to be laid off, platted and subdivided and does hereby lay off, plat and subdivide said real estate in accordance with the within plat.

This subdivision shall be known and designated as, Tuckahoe Development, a Planned Unit Development to the Town of Munster, Lake County, Indiana. All streets, alleys and crosswalks shown and not heretofore dedicated are hereby dedicated to the Town of Munster; provided, however, that all ingress-egress easements within the subdivision are private streets and are not dedicated to the Town of Munster.

Witness its hand this _____ day of _____, 20____

Tuckahoe Development, LLC

By: Ronald W. McFarland

STATE OF INDIANA } §
COUNTY OF LAKE }

Before me, a Notary Public in and for said County and State, personally appeared Ronald W. McFarland, known to me to be the same person who signed the hereon certificate for Tuckahoe Development, LLC, who acknowledged to me that he signed and delivered said instruments as his own free and voluntary act, for the uses and purposes herein set forth.

Given under my hand and notarial seal this _____ day of _____, 20____

My Commission expires: _____ Notary Public _____
County of Residence: _____

STATE OF INDIANA } §
COUNTY OF LAKE }

Submitted to, approved and accepted by the Plan Commission of the Town of Munster, Lake County, Indiana this _____ day of _____, 20____

Plan Commission of the Town of Munster, Lake County, Indiana.

Chairman: _____ Executive Secretary: _____

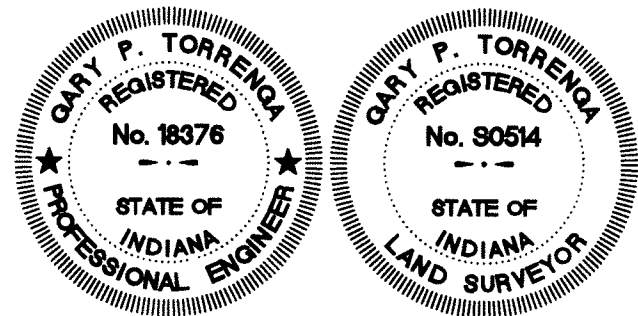
STATE OF INDIANA } §
COUNTY OF LAKE }

I, Gary P. Torrenge, hereby certify that I am a Registered Professional Engineer and Land Surveyor licensed under the Laws of the State of Indiana, that I have made a survey of the land shown and described hereon and subdivided same as shown on the plat hereon drawn, that this Plat correctly represents said survey and that all dimensions, linear and angular are correctly shown, and that all measurements or markers shown thereon actually exist and that their location, size type and description are accurately shown.

Witness my hand and Seal this _____ day of _____, 20____

TORRENGA ENGINEERING, INC.

Gary P. Torrenge - Registered P.E. #18376 and L.S. #S0514



Area = 79,141 Sq. Ft. / 1.82 Acres

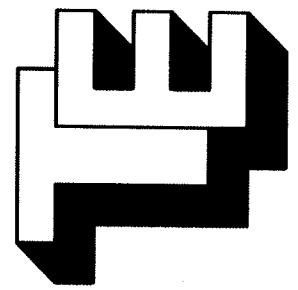
LOT 1

Creek Block 5
(PLAT BOOK 50, PAGE 29)

NORTH
GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.



TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
website: www.torrenge.com
Tel. No.: (219) 838-8918

~ Tuckahoe Development ~
Munster, Lake County, Indiana
FINAL PLAT

CLIENT: Highland Homes
2500 Highland
Highland, Indiana 46322
JOB NO: 5129-2006
DATE: 04/11/2007
REVISIONS:
06-25-2013

SCALE: 1" = 30'

SHEET
1 OF 1