BALLINGER ESTATES
PHASE II

SITUATED IN THE CITY OF MASSILLON, COUNTY OF STARK,
STATE OF OHIO AND BEING ORIGINAL OUTLOT 303.

PROPOSED 14 LOTS

PROJECT APPROVALS

SUBDIVISION IMPROVEMENT PLANS APPROVED BY THE CITY OF MASSILLON ENGINEER
THIS ____ DAY OF _____, 2007.

_____
CITY OF MASSILLON ENGINEER

SANITARY SEWER IMPROVEMENT PLANS APPROVED BY THE CITY OF MASSILLON ENGINEER
THIS ____ DAY OF _____, 2007.

_____
CITY OF MASSILLON ENGINEER

WATER LINE PLANS APPROVED BY AQUA OHIO, INC. THIS ____ DAY OF _____, 2007. SUBJECT TO AGREEMENT WITH AQUA OHIO, INC.

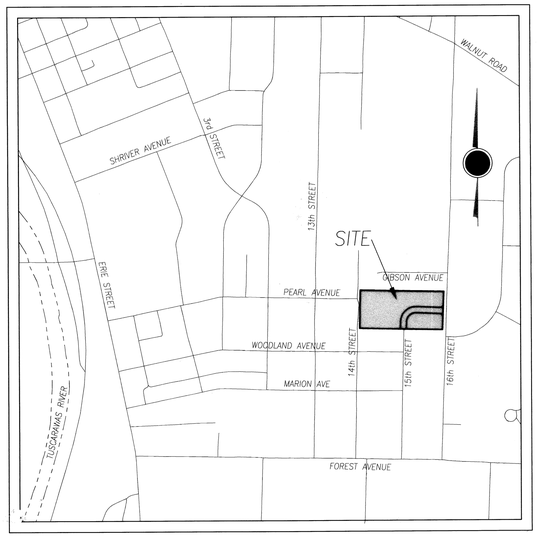
_____
AQUA OHIO, INC.

SANITARY SEWER PERMIT-TO-INSTALL HAS BEEN RECEIVED FROM THE OHIO EPA THIS ____ DAY OF _____, 2007.

WATER LINE PERMIT-TO-INSTALL HAS BEEN RECEIVED FROM THE OHIO EPA THIS ____ DAY OF _____, 2007.

PROJECT INFORMATION

1) SANITARY EFFLUENT FROM THIS PROJECT DISCHARGES TO CITY OF MASSILLON.
2) NUMBER OF LOTS = 14
3) AREA = 5.1166 ACRES
4) TOTAL LF OF ROADWAY = 672 LF
5) TOTAL LF PUBLIC SANITARY = 788 LF
6) TOTAL LF PUBLIC STORM = 898 LF
7) TOTAL LF PUBLIC WATER = 835 LF



VICINITY MAP
SCALE: 1" = 600'

INDEX OF SHEETS

QUANTITIES
PAVEMENT 472.83 LF (15TH STREET & BALLINGER AVENUE)
PAVEMENT 375.79 LF (14TH STREET)
PAVEMENT 318 LF (16TH STREET)
8" SANITARY 664 LF
8" WATER 800 LF
24" STORM 148 LF
18" STORM 428 LF
15" STORM 180 LF
12" STORM 318 LF

UTILITY OWNERSHIP

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 O.R.C.

WATER: AQUA OHIO
870 THIRD STEET NW
MASSILLON, OHIO 44647
(330) 832-7600

ELECTRIC: OHIO EDISON
1910 W MARKET BLDG #1
AKRON, OHIO 44313
(330) 384-4839

GAS: DOMINION EAST OHIO
1201 EAST 55th STREET
CLEVELAND, OHIO 44103
(216) 736-6675

TELEPHONE: AT&T
229 WEST 7th STREET
10th FLOOR
AKRON, OHIO 44308
(330) 384-2237

SANITARY: CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO
(330) 830-1722

CABLE: MASSILLON CABLE TV
814 CABLE CT NW
MASSILLON, OHIO 44648
(330) 833-4134

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

SITE BENCHMARKS:

GIN GEAR IN ASPH PVMT; NW CORNER OF WOODLAND AND 14th ST
ELEVATION 1034.93

TOP ⅝" I. PIN MONUMENT; CENTERLINE 15th ST AND SOUTH R/W MARION
ELEVATION: 1043.47

ONLY APPROVED SIGNED PLANS BY THE CITY ENGINEER ARE TO BE USED FOR CONSTRUCTION

PLANS PREPARED BY: M. NEFF DESIGN GROUP

MATTHEW C. NEFF, P.E., P.S.
PROFESSIONAL ENGINEER #49050
PROFESSIONAL SURVEYOR #7315

9.04.08
DATE
ASBUILTS 08.26.08

DEVELOPER:
MASSILLON HOMES II, LLC
5309 TRANSPORTATION BLVD
CLEVELAND, OHIO 44125
MARY HADA
(216) 475-9300

ENGINEER:
M NEFF DESIGN GROUP
5422 EAST 96TH STREET, SUITE 120
CLEVELAND, OHIO 44125
MATTHEW NEFF, P.E., P.S.
(216) 663-8820

STATE OF OHIO ★ ENGINEER ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
TITLE SHEET

Revisions Number	Date	Description
1	05/04/07	REVISIONS PER OEPA
2	05/22/07	REVISIONS PER CITY
	08.26.08	AsBuilts

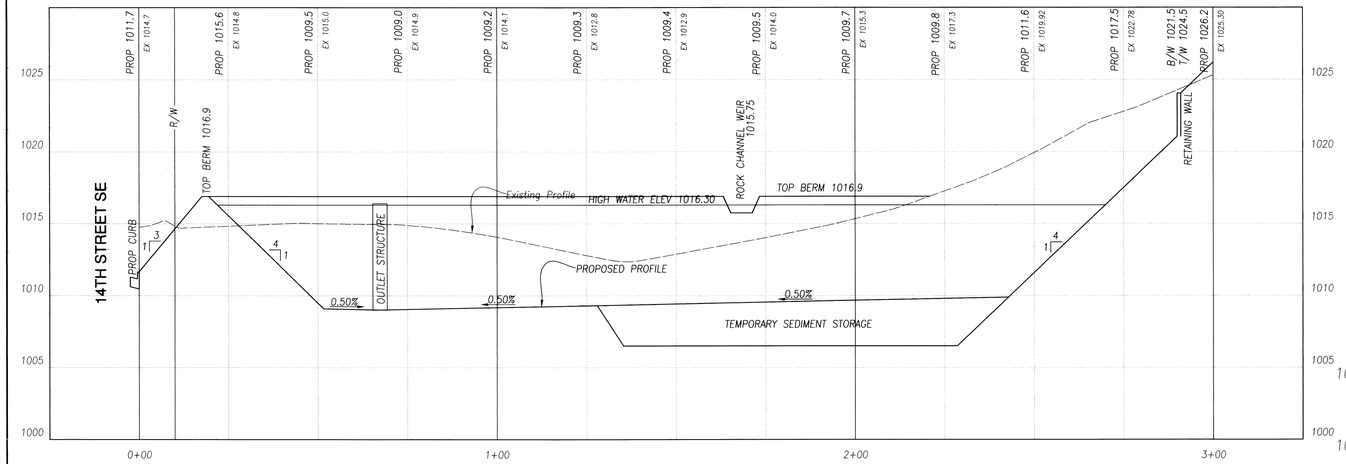
PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

Horizontal Scale	Vertical Scale
-	-
Original Submission	Last Plot Date
Feb 06, 2007	Sep 03, 2008
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

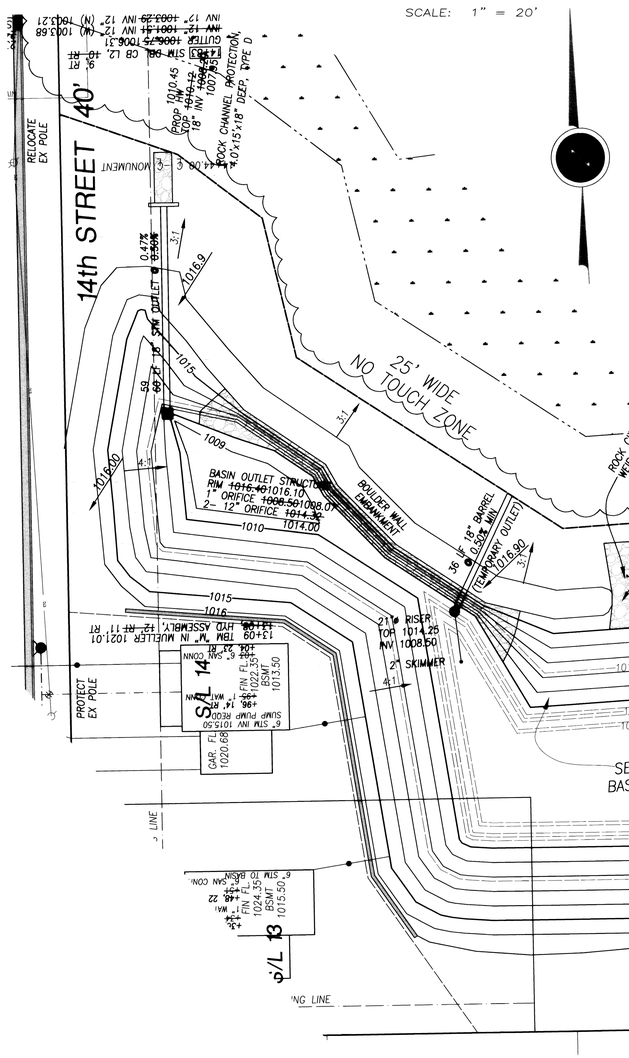
Sheet 1 of 20

08 SD 01

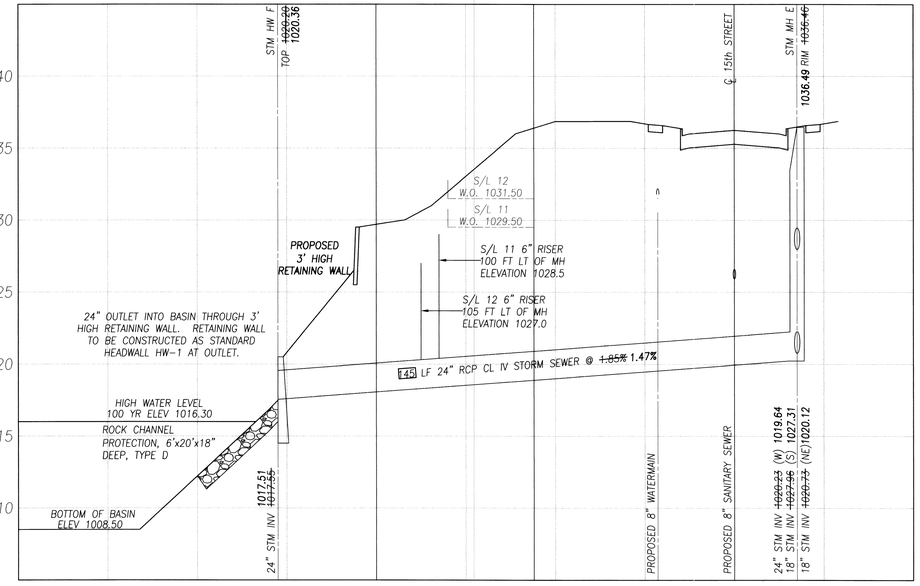
Drawing File: J:\7200-7399\7323 Massillon - Solid Site\7323.dwg Sep 03, 2008 - 4:47pm



DETENTION BASIN CROSS SECTION



SCALE: 1" = 20'



BASIN OUTLET

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

STATE OF OHIO * MATTHEW C NEFF E-49050 REGISTERED * PROFESSIONAL ENGINEER

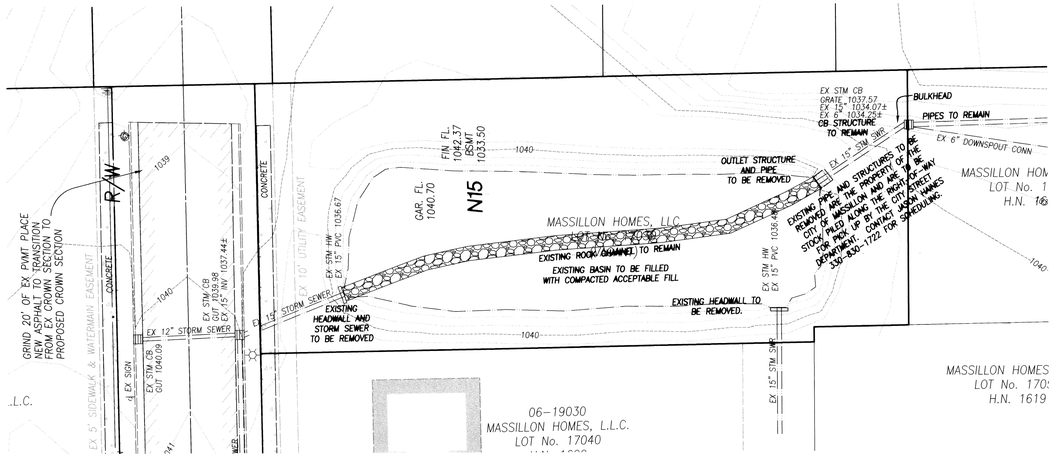
IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
DETENTION BASIN PLAN

Revisions Number	Date	Description
	08.26.08	As Built

Horizontal Scale 1" = 20'	Vertical Scale 1" = 5'
Original Submission Feb 06, 2007	Last Plot Date Sep 03, 2008
Drawn By DLN	Checked By
Project Number 7323	Field Crew FS & BH
Sheet 5 of 20	

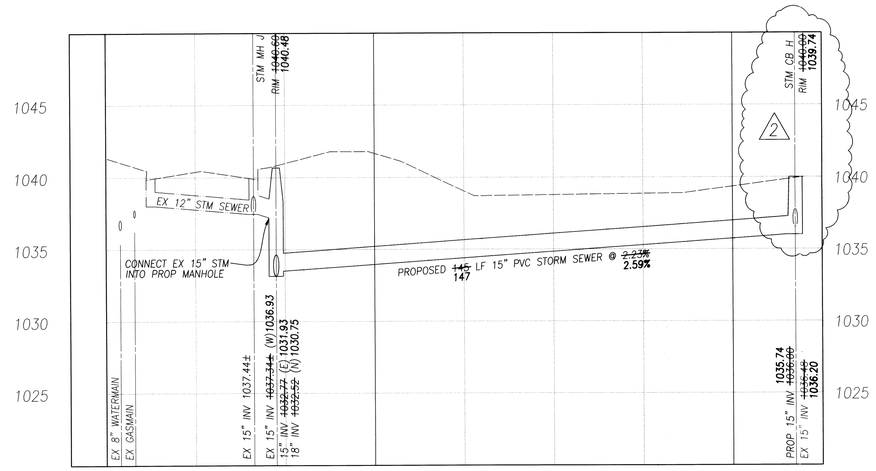
08 SD 01

Drawing File: J:\7300-7399\7323 Magallon - Subd Site\7323.dwg Sep 03, 2008 - 4:47pm



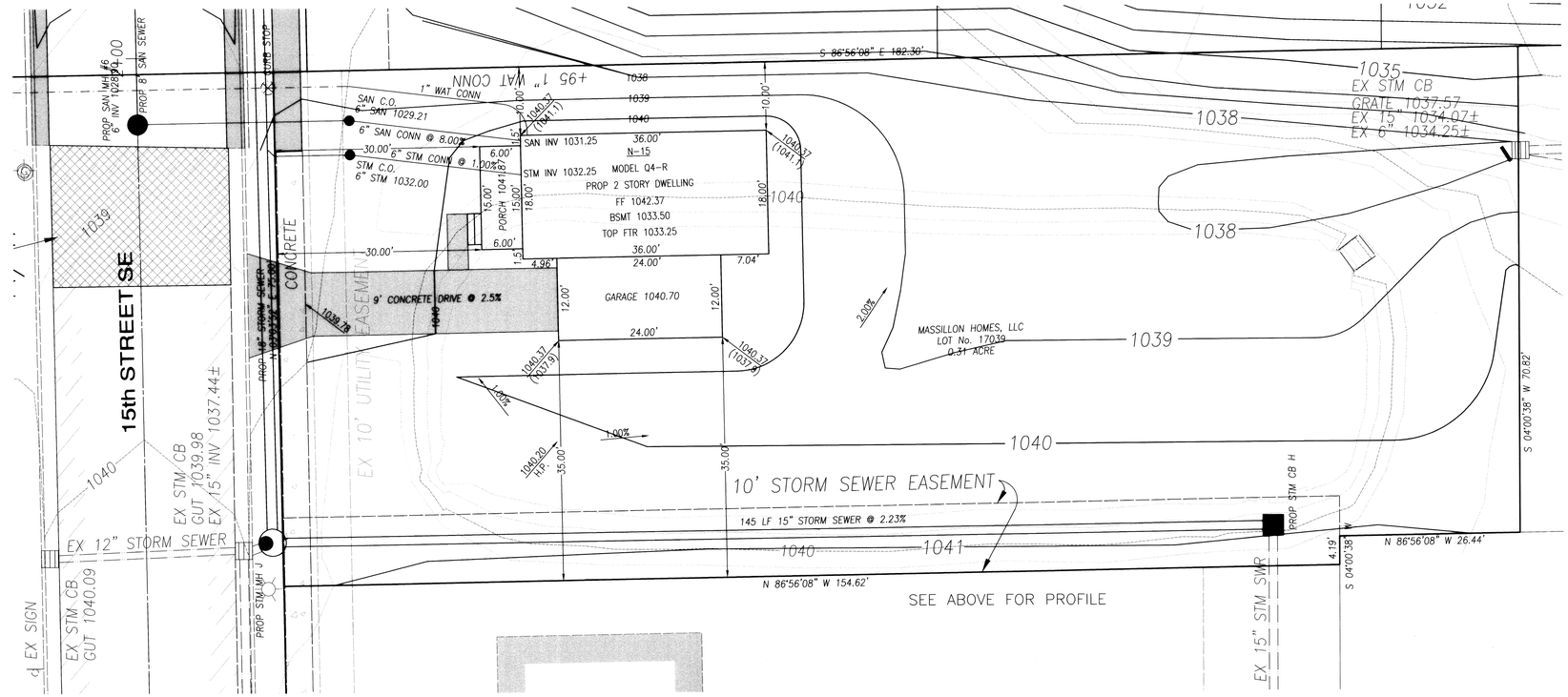
N15 DEMOLITION PLAN

SCALE: 1" = 20'



N15 STORM SEWER PROFILE

SCALE: 1" = 20'



N15 SITE PLAN

SCALE: 1" = 10'

LEGEND

- EX SAN MANHOLE
- EX STORM MANHOLE
- EX CATCH BASIN
- EX HYDRANT
- EX WATER LINE VALVE
- EX WATER SERVICE VALVE
- EX WATER MANHOLE
- EX WATER METER
- UTILITY POLE
- UTILITY POLE w/TRANSFORMER
- LIGHT POLE
- GUY ANCHOR
- CHAIN LINK FENCE
- WOOD FENCE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- ELECTRIC GROUND TRANSFORMER
- CABLE TV PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- DECIDUOUS TREE
- CONIFEROUS TREE
- ORANGE CONSTRUCTION FENCE
- SILT FENCE

STATE OF OHIO * ENGINEER * MATTHEW C. NEFF E-49050 REGISTERED * PROFESSIONAL

IMPROVEMENT PLANS FOR: BALLINGER ESTATES PHASE II

N15 PLAN

Revisions Number	Date	Description
	08.28.08	AsBuilts
2	05.22.07	REVISIONS PER CITY

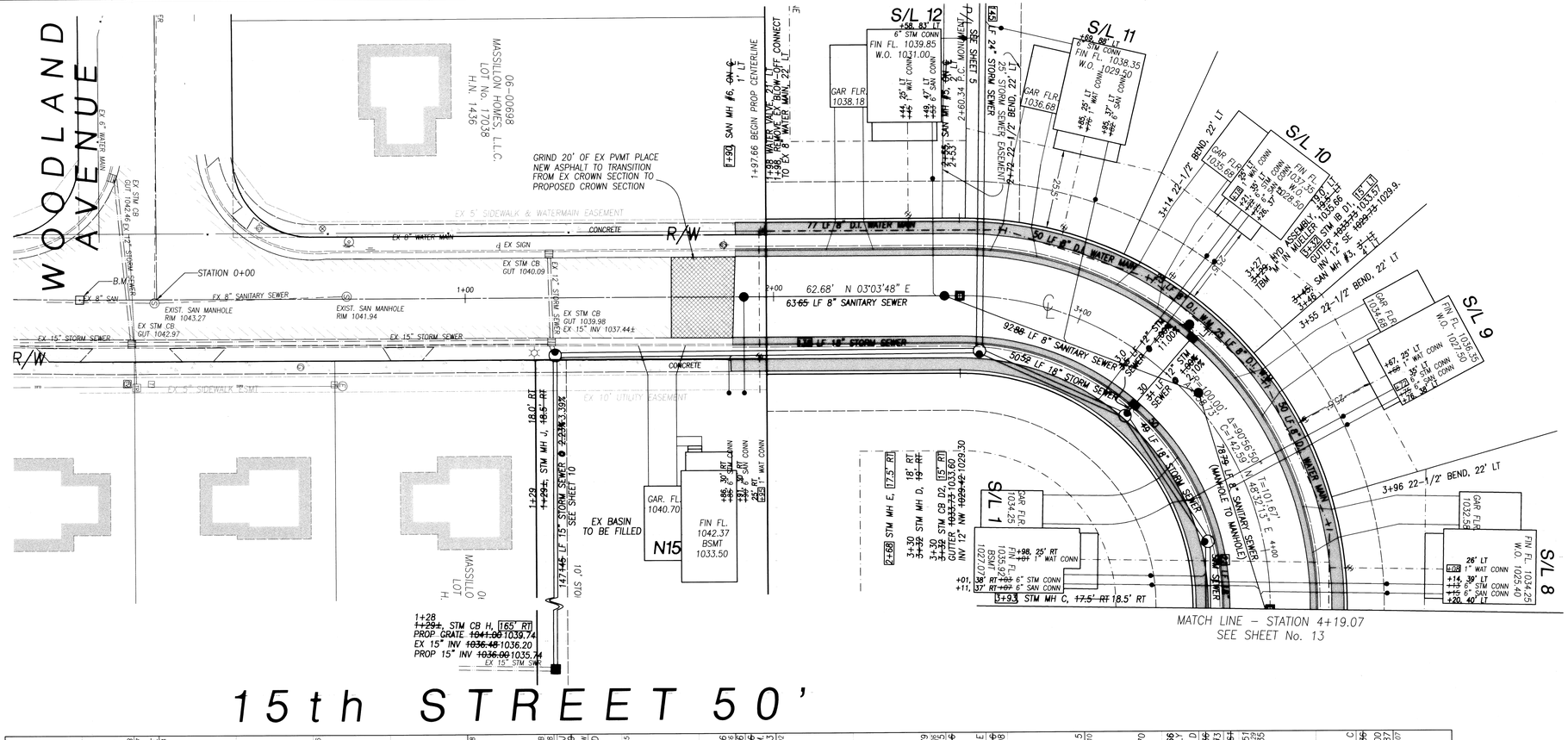
PLANNERS | ENGINEERS | SURVEYORS
mNEFF design group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

Horizontal Scale	Vertical Scale
AS SHOWN	-
Original Submission	Last Plot Date
Feb 06, 2007	Sep 03, 2008
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 10 of 20

08 SD 01

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Sep 03, 2008 - 4:49pm



SCALE: 1" = 20'

LEGEND

- EX SAN MANHOLE
- EX STORM MANHOLE
- EX CATCH BASIN
- EX HYDRANT
- EX WATER LINE VALVE
- EX WATER SERVICE VALVE
- EX WATER MANHOLE
- EX WATER METER
- UTILITY POLE
- UTILITY POLE w/TRANSFORMER
- LIGHT POLE
- GUY ANCHOR
- CHAIN LINK FENCE
- WOOD FENCE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- ELECTRIC GROUND TRANSFORMER
- CABLE TV PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- DECIDUOUS TREE
- CONIFEROUS TREE
- ORANGE CONSTRUCTION FENCE
- SILT FENCE

NOTES:

1) BUILDING FOOTPRINTS AND BASEMENT OPTIONS ARE ILLUSTRATIVE ONLY AND DO NOT NECESSARILY REFLECT THE FINAL PLAN FOR EACH LOT AND DWELLING. THIS WILL BE DETERMINED AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

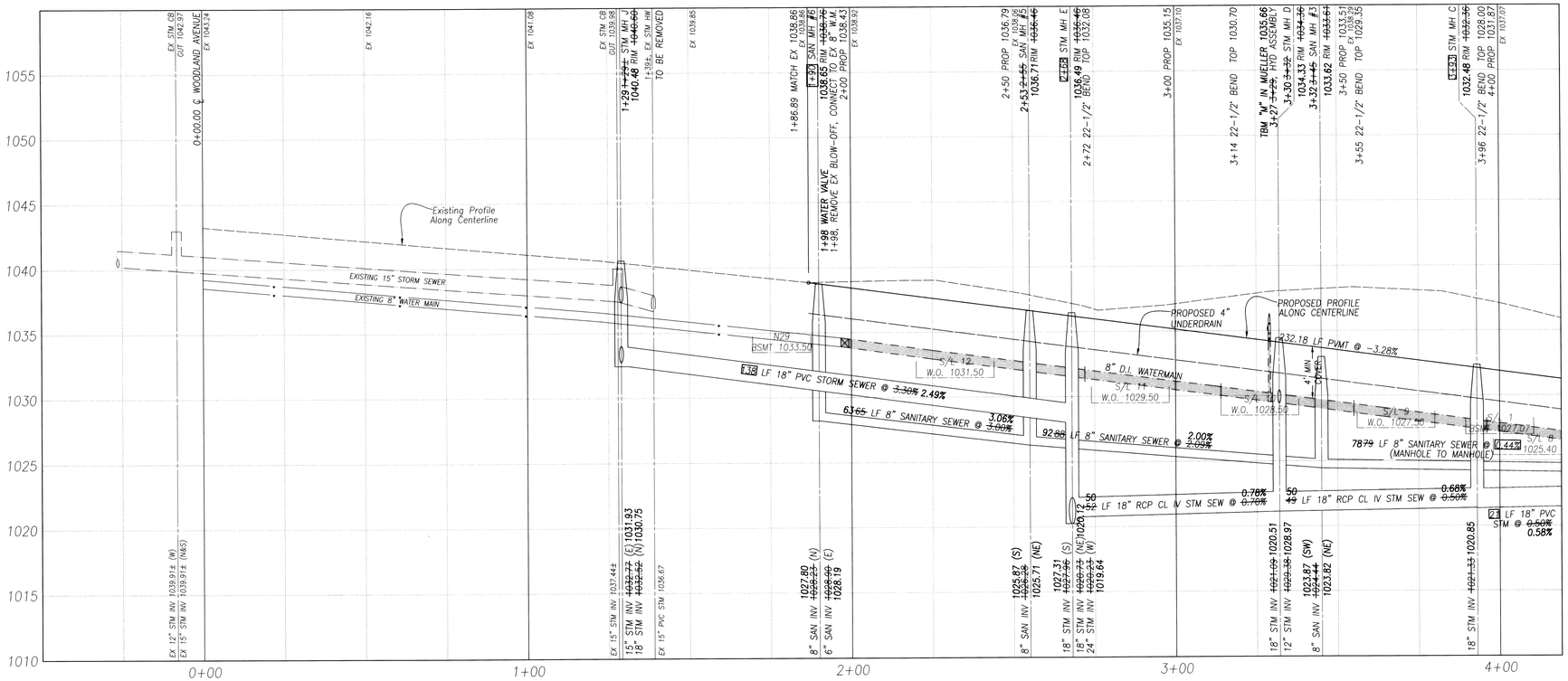
2) ALL ELEVATIONS SHOWN FOR HOUSES ON EACH LOT WILL BE VERIFIED AND ADJUSTED AS NECESSARY AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

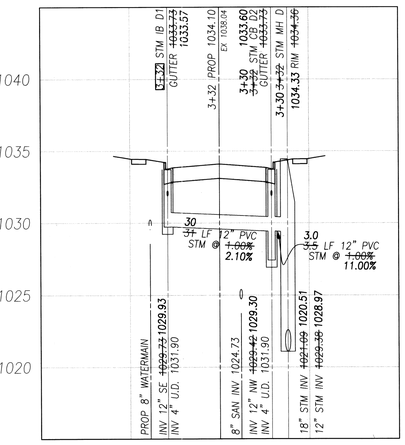
3) STORM AND SANITARY CONNECTION INSTALLATION SHALL INCLUDE TEST TEE, PIPE THROUGH UTILITY EASEMENT AND ANY CLEANOUTS WHERE INDICATED. WATER CONNECTION INSTALLATION SHALL INCLUDE CURB SHUT-OFFS.

4) ALL PROPOSED WATERMAIN IS TO BE DUCTILE IRON, CLASS 52 WITH POLYWRAP.

5) SUBLOT 8 WILL REQUIRE A SANITARY GRINDER PUMP TO SERVICE THE BASEMENT.

15th STREET 50'





CATCH BASIN PROFILE
STATION 3+32

STATE OF OHIO
MATTHEW C. NEFF
E-49050
REGISTERED
PROFESSIONAL ENGINEER

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
PLAN AND PROFILE
15th STREET

Revisions		
Number	Date	Description
3	07.27.07	DWELLING GRADE REVISIONS
	08.28.08	As-Builts

Horizontal Scale 1" = 20'	Vertical Scale 1" = 5'
Original Submission Feb 06, 2007	Last Plot Date Sep 03, 2008
Drawn By DLN	Checked By
Project Number 7323	Field Crew FS & BH
Sheet 12 of 20	

08 SD 01

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Sep 03, 2008 - 4:50pm

SCALE: 1" = 20'

LEGEND

- EX SAN MANHOLE
- EX STORM MANHOLE
- EX CATCH BASIN
- EX HYDRANT
- EX WATER LINE VALVE
- EX WATER SERVICE VALVE
- EX WATER MANHOLE
- EX WATER METER
- UTILITY POLE
- UTILITY POLE w/TRANSFORMER
- LIGHT POLE
- GUY ANCHOR
- CHAIN LINK FENCE
- WOOD FENCE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- ELECTRIC GROUND TRANSFORMER
- CABLE TV PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- DECIDUOUS TREE
- CONIFEROUS TREE
- ORANGE CONSTRUCTION FENCE
- SILT FENCE

NOTES:

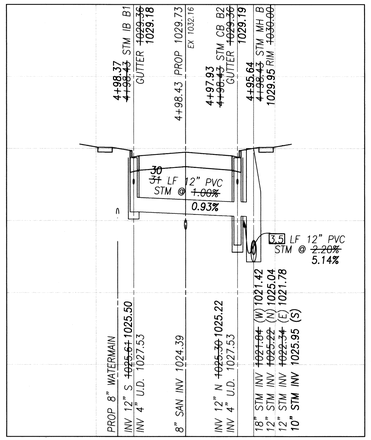
1) BUILDING FOOTPRINTS AND BASEMENT OPTIONS ARE ILLUSTRATIVE ONLY AND DO NOT NECESSARILY REFLECT THE FINAL PLAN FOR EACH LOT AND DWELLING. THIS WILL BE DETERMINED AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

2) ALL ELEVATIONS SHOWN FOR HOUSES ON EACH LOT WILL BE VERIFIED AND ADJUSTED AS NECESSARY AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

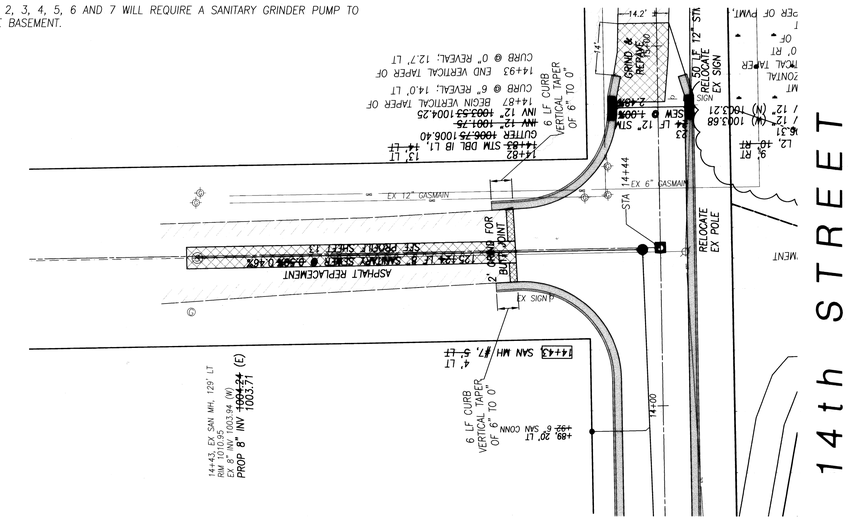
3) STORM AND SANITARY CONNECTION INSTALLATION SHALL INCLUDE TEST TEE, PIPE THROUGH UTILITY EASEMENT AND ANY CLEANOUTS WHERE INDICATED. WATER CONNECTION INSTALLATION SHALL INCLUDE CURB SHUT-OFFS.

4) ALL PROPOSED WATERMAIN IS TO BE DUCTILE IRON, CLASS 52 WITH POLYWRAP.

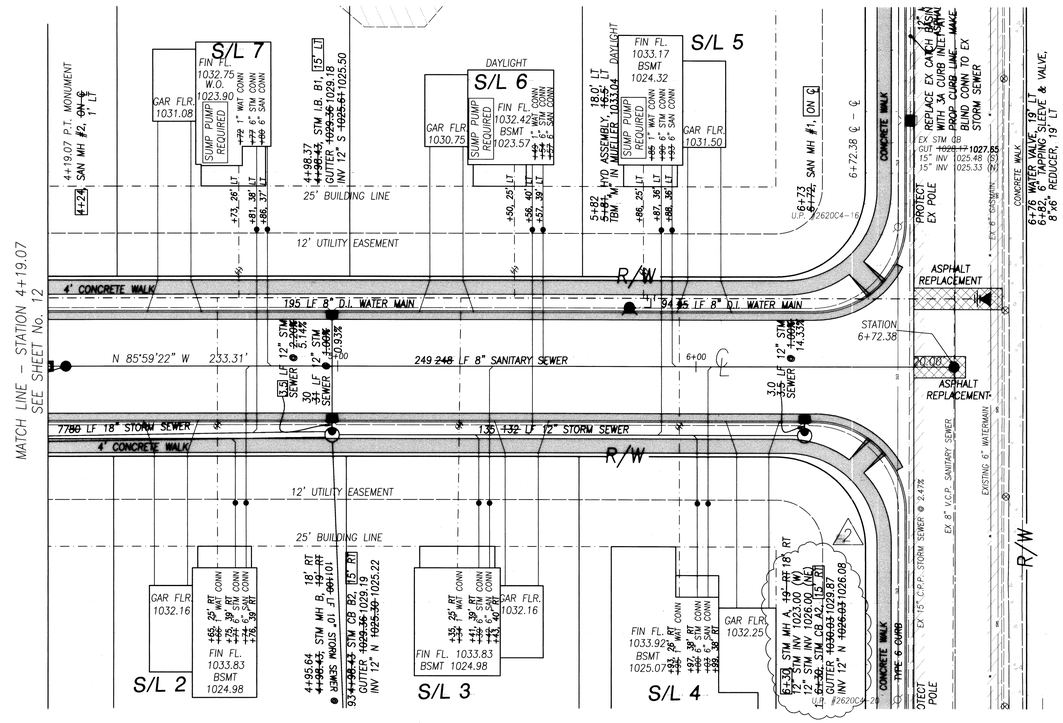
5) SUBLOTS 2, 3, 4, 5, 6 AND 7 WILL REQUIRE A SANITARY GRINDER PUMP TO SERVICE THE BASEMENT.



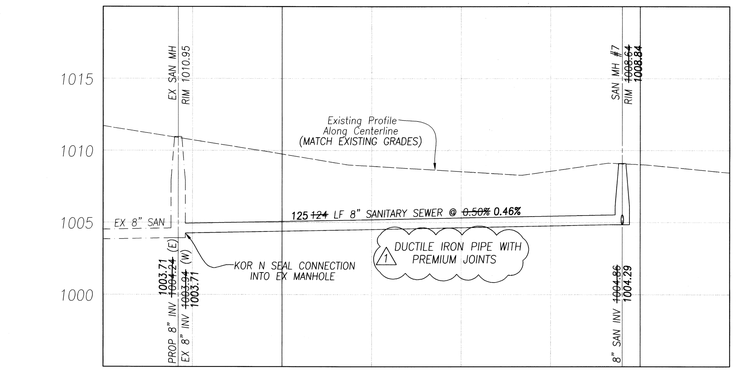
CATCH BASIN PROFILE
STATION 4+98.43



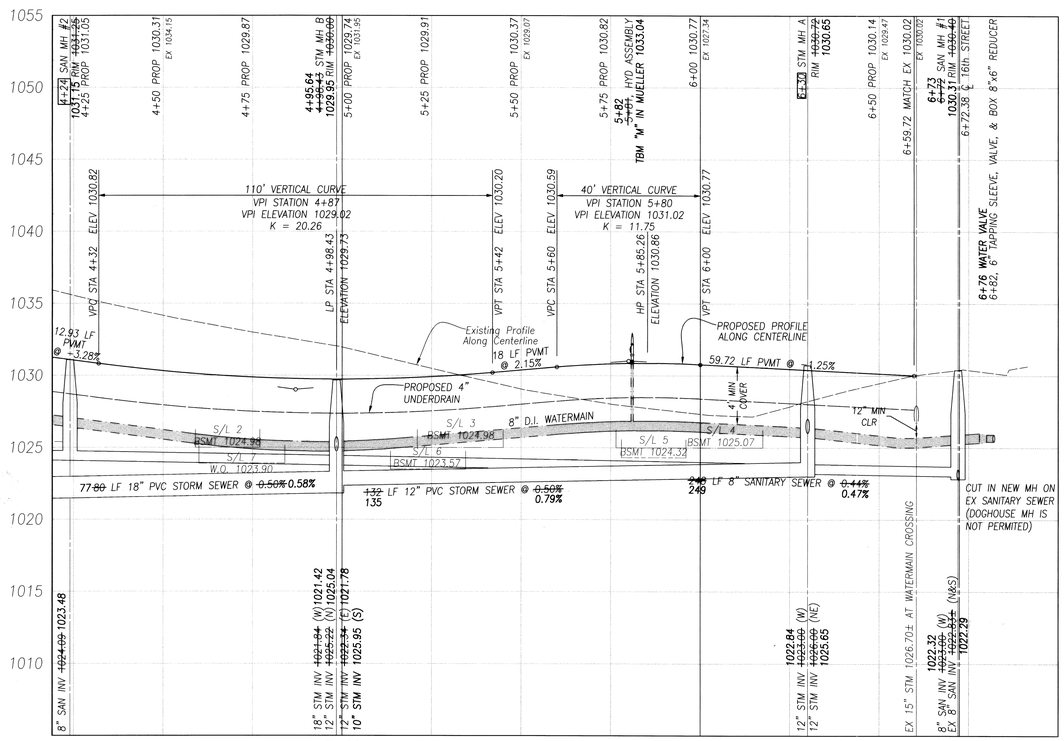
14th STREET



BALLINGER AVENUE 50'



PEARL AVE 40'



16th STREET

IMPROVEMENT PLANS FOR:

BALLINGER ESTATES PHASE II

PLAN AND PROFILE -BALLINGER AVENUE; PEARL AVENUE

STATE OF OHIO ★ ENGINEER ★ MATTHEW C. NEFF E-49050 REGISTERED PROFESSIONAL

Revisions			
Number	Date	Description	
1	05/04/07	REVISIONS PER OEPA	
2	05/22/07	REVISIONS PER CITY	
3	07/27/07	DWELLING GRADE REVISIONS	
	08.26.08	AsBuilts	

mNEFFdesign group
PLANNERS | ENGINEERS | SURVEYORS
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale 1" = 20'	Vertical Scale -
Original Submission Feb 06, 2007	Last Plot Date Sep 03, 2008
Drawn By DLN	Checked By
Project Number 7323	Field Crew FS & BH
Sheet 13 of 20	

08 SD 01

NOTES:
1) BUILDING FOOTPRINTS AND BASEMENT OPTIONS ARE ILLUSTRATIVE ONLY AND DO NOT NECESSARILY REFLECT THE FINAL PLAN FOR EACH LOT AND DWELLING. THIS WILL BE DETERMINED AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

2) ALL ELEVATIONS SHOWN FOR HOUSES ON EACH LOT WILL BE VERIFIED AND ADJUSTED AS NECESSARY AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

3) STORM AND SANITARY CONNECTION INSTALLATION SHALL INCLUDE TEST TEE, PIPE THROUGH UTILITY EASEMENT AND ANY CLEANOUTS WHERE INDICATED. WATER CONNECTION INSTALLATION SHALL INCLUDE CURB SHUT-OFFS.

4) ALL PROPOSED WATERMAIN IS TO BE DUCTILE IRON, CLASS 52 WITH POLYWRAP.

MASSILLON NOTES:
1) WOODLAND AVENUE IS PAVED IN A SPECIFIC MANNER FOR DRAINAGE. CONTRACTOR IS TO REPLACE PAVEMENT EXACTLY AS BEFORE PER THE DIRECTION OF THE CITY ENGINEER'S OFFICE.

2) CONTRACTOR TO COORDINATE UTILITY POLE RELOCATION WITH THE PROPER UTILITIES.

3) CONTRACTOR TO COORDINATE SIGN RELOCATION WITH THE CITY STREET DEPARTMENT, MARK LIGHTFOOT AT (330) 833-5764.

STATE OF OHIO ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
PLAN AND PROFILE
14th STREET

Revisions		
Number	Date	Description
	08.26.08	AsBuilts

PLANNERS | ENGINEERS | SURVEYORS

mNEFFdesigngroup

DESIGNING LAND FOR YOUR WORLD

5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale	Vertical Scale
1" = 20'	1" = 5'
Original Submission	Last Plot Date
Feb 06, 2007	Sep 03, 2008
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 14 of 20

08 SD 01

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Sep 03, 2008 - 4:51pm

BALLINGER ESTATES
PHASE II

SITUATED IN THE CITY OF MASSILLON, COUNTY OF STARK,
STATE OF OHIO AND BEING ORIGINAL OUTLOT 303.

PROPOSED 14 LOTS

PROJECT APPROVALS

SUBDIVISION IMPROVEMENT PLANS APPROVED BY THE CITY OF MASSILLON ENGINEER
THIS 6th DAY OF JUNE, 2007.

CITY OF MASSILLON ENGINEER

SANITARY SEWER IMPROVEMENT PLANS APPROVED BY THE CITY OF MASSILLON ENGINEER
THIS 6th DAY OF JUNE, 2007.

CITY OF MASSILLON ENGINEER

WATER LINE PLANS APPROVED BY AQUA OHIO, INC. THIS _____ DAY
OF _____, 2007. SUBJECT TO AGREEMENT WITH AQUA OHIO, INC.

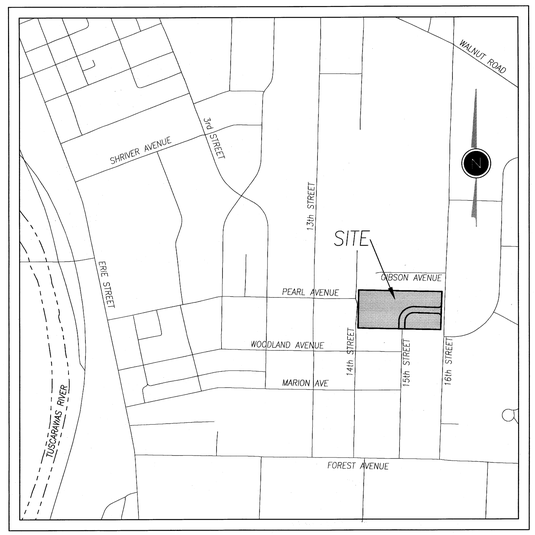
AQUA OHIO, INC.

SANITARY SEWER PERMIT-TO-INSTALL HAS BEEN RECEIVED FROM THE OHIO EPA THIS
_____ DAY OF _____, 2007.

WATER LINE PERMIT-TO-INSTALL HAS BEEN RECEIVED FROM THE OHIO EPA
THIS _____ DAY OF _____, 2007.

PROJECT INFORMATION

1) SANITARY EFFLUENT FROM THIS PROJECT DISCHARGES TO CITY OF MASSILLON.
2) NUMBER OF LOTS = 14
3) AREA = 5.1166 ACRES
4) TOTAL LF OF ROADWAY = 672 LF
5) TOTAL LF PUBLIC SANITARY = 788 LF
6) TOTAL LF PUBLIC STORM = 898 LF
7) TOTAL LF PUBLIC WATER = 835 LF



VICINITY MAP
SCALE: 1" = 600'

INDEX OF SHEETS

QUANTITIES
PAVEMENT 472.83 LF (15TH STREET & BALLINGER AVENUE)
PAVEMENT 375.79 LF (14TH STREET)
PAVEMENT 318 LF (16TH STREET)
8" SANITARY 664 LF
8" WATER 800 LF
24" STORM 148 LF
18" STORM 428 LF
15" STORM 180 LF
12" STORM 318 LF

UTILITY OWNERSHIP

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 O.R.C.

WATER: AQUA OHIO
870 THIRD STEET NW
MASSILLON, OHIO 44647
(330) 832-7600

ELECTRIC: OHIO EDISON
1910 W MARKET BLDG #1
AKRON, OHIO 44313
(330) 384-4839

GAS: DOMINION EAST OHIO
1201 EAST 55th STREET
CLEVELAND, OHIO 44103
(216) 736-6675

TELEPHONE: AT&T
229 WEST 7th STREET
10th FLOOR
AKRON, OHIO 44308
(330) 384-2237

SANITARY: CITY OF MASSILLON
151 LINCOLN WAY EAST
MASSILLON, OHIO
(330) 830-1722

CABLE: MASSILLON CABLE TV
814 CABLE CT NW
MASSILLON, OHIO 44648
(330) 833-4134

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

SITE BENCHMARKS:

GIN GEAR IN ASPH PVMT; NW CORNER OF WOODLAND AND 14th ST
ELEVATION 1034.93

TOP ⅝" I. PIN MONUMENT; CENTERLINE 15th ST AND SOUTH R/W MARION
ELEVATION: 1043.47

ONLY APPROVED SIGNED PLANS BY THE CITY ENGINEER ARE TO BE USED FOR CONSTRUCTION

PLANS PREPARED BY: M. NEFF DESIGN GROUP

MATTHEW C. NEFF, P.E. P.S.
PROFESSIONAL ENGINEER #49050
PROFESSIONAL SURVEYOR #7315

5.25.07
DATE

DEVELOPER:
MASSILLON HOMES II, LLC
5309 TRANSPORTATION BLVD
CLEVELAND, OHIO 44125
MARY HADA
(216) 475-9300

ENGINEER:
M NEFF DESIGN GROUP
5422 EAST 96TH STREET, SUITE 120
CLEVELAND, OHIO 44125
MATTHEW NEFF, P.E., P.S.
(216) 663-8820

STATE OF OHIO ★ ENGINEER ★ PROFESSIONAL
MATTHEW NEFF E-49050 REGISTERED

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
TITLE SHEET

Revisions		
Number	Date	Description
1	05/04/07	REVISIONS PER OEPA
2	05/22/07	REVISIONS PER CITY

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

Horizontal Scale	Vertical Scale
-	-
Original Submission	Last Plot Date
Feb 06, 2007	May 23, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 1 of 20

08 SD 01

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg May 23, 2007 - 5:06pm

SECTION 1 – GENERAL

SUBSOIL INVESTIGATION:

All contractors, prior to submitting bids for this improvement, will be permitted to dig test holes within the limits of this proposed work. At least 48 hour notice must be given to the owner, and the location of all test holes is subject to the approval of the owner. The contractor shall be responsible for all damage resulting from digging these holes and he shall restore all property to a condition similar or equal to that existing before such digging was done. Rock excavation shall not be paid for as a separate item, but shall be included in the unit price bid for other various items.

CONSTRUCTION AND MATERIAL SPECIFICATIONS:

Material and/or workmanship shall follow the "State of Ohio, Department of Transportation, Construction and Material Specifications", dated January 1, 2002 or any subsequent issues thereof. Throughout the plans the reference to specific ODOT item numbers are indicated. Material and workmanship shall also conform to the engineering design and construction manual of the City of Massillon and the ordinances of the City of Massillon where conflicts occur in the above. The engineer of the City of Massillon shall determine the governing authority. Any defects in the construction including materials or workmanship shall be repaired or replaced as directed by the City Engineer. Reference throughout these plans to "The Engineer" shall be the owner's engineer. "City Engineer" shall be the Engineer of the City of Massillon.

ELEVATION DATUM:

All elevations shown on these plans are in feet above the U.S.G.S. datum plane.

UTILITIES:

Prior to construction, the contractor shall call Ohio Utilities Protection Service (OUPS), at 1–800–362–2764. The following is believed to be the list of utility owners within the limits of construction:

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE 1–800–362–2764
OHIO UTILITIES PROTECTION SERVICE

Any and all work required for removal, relocation and/or new construction facilities for private or public utilities will be done by and at the expense of the respective owners unless otherwise noted on the plans. The procedure as outlined in the Ohio revised code section 163.64. Regarding utility identification shall be followed. Namely the owner will notify the underground utility protection service and the individual utility 48 hours prior to commencing work. The underground utility owner must stake, mark or otherwise designate the location of its facility. The locations of underground utilities shown on these plans have been obtained by diligent field checks and searches of available records.

PRE–CONSTRUCTION CONFERENCES:

At least five days prior to the start of actual construction work, if required by the City, a pre–construction conference shall be held at the direction of the City of Massillon Engineer, all appropriate City officials, and the owner's engineer. The contractor or his authorized superintendant shall be present along with any and all private utility company representatives. This meeting will be for coordination and procedure review prior to commencing any physical work.

STATIONING AND LOCATIONS:

Stationing and location indicated on these plans are approximate. All locations and items called out by station are subject to adjustment in the field as directed by the engineer.

INSPECTION:

The cost of all inspection, permits, or tests shall be paid by the contractor and included in the unit prices bid. Unless noted otherwise the initial payment for inspection or testing by the City of Massillon or its agents shall be paid from a deposit made by the owner to the City of Massillon. But by verification of invoice from the City of Massillon these fees will be deducted from payments due the contractor. No final estimate will be issued until all fees for inspection and testing have been invoiced by the City of Massillon or its agents.

The contractor shall not commence with any form of construction without contacting the offices of the City of Massillon Engineer and Aqua Ohio to arrange for inspection. If any change in the work schedule becomes necessary, it will be to avoid unnecessary inspection costs. If no modification is made in regards to cancellation of work, the contractor will be charged for the inspection time incurred.

PRECAUTION AGAINST UTILITY DAMAGE:

The contractor shall take all necessary precautions at no expense to the owner to avoid damage to existing underground utility lines during the installation of the proposed improvements. It may be necessary to change the alignment or the flow line elevation of proposed sewers due to various existing utility lines with approval of the Engineer. The contractor shall make investigations to determine the location of existing utility lines prior to the installation of the proposed improvements. Such investigations shall be at no additional cost to the owner.

DUST CONTROL:

The contractor shall supply all labor, material and equipment necessary such as calcium chloride, water, or a motorized dust–free street sweeping device, as directed by the engineer, to maintain all roadways being used for access to the construction site. Payment for all dust control measures shall be included in the unit price bid for other various items.

SECTION 2 – SITE CLEARING

PART I: GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of contract, including general and supplementary conditions and specifications sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of site clearing is shown on drawings. Site clearing work includes, but is not limited to:

* Removal of trees and other vegetation
* Clearing and grubbing
* Removing existing walks, curbs, pavement, headwalls and utilities as indicated
* Maintain positive drainage during construction
* Removal of existing dwelling

JOB CONDITIONS:

Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, parking, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, parking, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

Protection of existing improvements: Provide protection necessary to prevent damage to existing improvements indicated to remain in place.

Protect improvements on adjoining properties and on owner's property.

Restore damaged improvements to their original condition, as acceptable to parties having jurisdiction.

PART II: EXECUTION

SITE CLEARING:

General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items from owner's property and dispose of off–site in a legal manner. Removal includes digging out stumps and roots.

Clearing and Grubbing: Clear site of trees, shrubs and other vegetation, except for those indicated in the plans.

Completely remove stumps, roots, and other debris protruding through ground surface.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

Place fill material in horizontal layers not exceeding 6" loose depth, and thoroughly compact to adjacent original ground.

Removal of Improvements: Remove existing above grade and below grade improvements necessary to permit construction and other work as indicated.

DISPOSAL OF WASTE MATERIALS:

Removal from Owner's Property: Remove waste materials from owner's property and dispose of off–site in a legal manner, as directed by the engineer.

Excess excavation is to be placed on the site as indicated by the plans. After placement of all excess excavation, the area shall be graded so that no depressions exist which will collect or pocket water. After grading is complete a mixture of 90% perennial rye grass and 10% Alsike clover shall be seeded in accordance with ODOT item 659.09.

The excess excavation pile shall be ringed with a silt fence or a straw bale barrier.

SECTION 3 – EARTHWORK

PART I: GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the contract including general and supplementary conditions and specifications sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of earthwork is indicated on drawings.

Preparation of subgrade and subbase material for walks and pavements is included as part of this work.

Excavation for Mechanical/Electrical Work: Excavation and backfill required in conjunction with underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances is included as work of this section.

Definition: "Excavation" consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.

QUALITY ASSURANCE:

Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

Testing and Inspection Service: Owner will engage soil testing and inspection service for quality control testing during earthwork operations.

SUBMITTALS:

Test Reports Excavating: Submit following reports directly to the engineer from the testing services, with copy to contractor, if testing is performed.

Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shutoff of services if lines are active.

Use of Explosives: The use of explosives is not permitted.

Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.

Operate warning lights as recommended by authorities having jurisdiction.

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART II: PRODUCTS

DEFINITIONS:

Satisfactory soil material (available on site): Naturally deposited granular material (this is the only on site material suitable for fill and replacement fill where undercutting is required).

Unsatisfactory soil materials: Shall be as determined by the testing agency.

Subbase Material: Mixture of crushed limestone with a gradation is compliance to ODOT specification item 304.

Drainage Fill: Washed, evenly graded mixture of limestone or suitable crushed gravel, with 100% passing a 1–1/2" sieve and not more than 5% passing a number 4 sieve.

Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen material, vegetable and other deleterious matter. No slag allowed.

PART III: EXECUTION

EXCAVATION:

Classifications: The following classifications of excavation will be made when rock excavation is encountered in work.

Earth excavation includes excavation of pavements and other obstructions visible on ground surface; underground structures, utilities and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.

Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the engineer. Unauthorized excavation, as well as remedial work directed by the engineer shall be at contractor's expense.

Backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by the engineer.

Additional Excavation: When excavation has reached required subgrade elevations, notify the engineer who will make an inspection of conditions.

If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated materials as directed by the engineer.

Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of materials excavated.

Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

Do not allow water to accumulate in excavations. Remove water to prevent soil changes detrimental to stability of subgrades.

Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavation to collecting on run–off areas. Do not use trench excavations as temporary drainage ditches.

Clean and maintain all catch basins during and at the completion of the work.

Material Storage: Stockpile satisfactory excavated materials where directed until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

Locate and retain soil materials away from edge of excavations, do not store within drip line of trees indicated to remain.

Dispose of excess soil material and waste materials as herein specified.

Excavation for Pavements: Cut surface under pavements to comply with cross–sections, elevations and grades as shown.

Excavation for Trenches: Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe conduit.

Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations.

For pipes or conduit 5" or less in nominal size and for flat bottomed multiple–duct conduit units do not excavate beyond indicated depths. Hand excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.

For pipes or conduit 6" or larger in nominal size, tanks and other mechanical/electrical work indicated to receive subbase, excavate to subbase depth indicated, or, if not otherwise indicated to 6" below bottom of work to be supported.

When rock is encountered during trench excavation, the rock will be removed to a minimum depth of 6" below the establishing pipe invert. A compacted bedding of subbase material is to be placed in the trench prior to installing pipe.

Grade bottoms of trenches as indicated, nothing under pipe bells to provide solid bearing for entire body of pipe.

Do not backfill trenches until test and inspections have been made and backfilling authorized by the Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

Trenches below pavement shall be as detailed on the drawings.

BACKFILL AND FILL:

General: Place acceptable soil material in layers to required subgrade elevations for each area classification listed below. No slag allowed.

In excavations, use satisfactory excavated or borrow material.

Under grassed areas, use satisfactory excavated or borrow material.

Under walks and pavements, use premium backfill.

Under piping and conduit, bedding to conform with uniform standard Type I bedding.

Backfill excavations as promptly as work permits, but not until completion of the removal of concrete formwork and removal of trash and debris.

Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. All trash and debris to be removed from site.

COMPACTION:

All Compaction, Subgrade Compaction and Concrete Cylinder Reports shall be furnished to the Engineer.

Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined for a Standard Proctor Test according to ASTM D698.

Provide not less than ninety–eight percent (98%) density of soil material compacted within two percent (2%) of the optimum moisture content for the actual density of each layer of soil material in place, and as approved by the soil engineer.

STRUCTURES:

Compact the subgrade and each layer of fill material or backfill matter per ODOT Item 203.

LAWN AND UNPAVED AREAS:

Compact the subgrade and each layer of fill material or backfill material.

Compact the upper 12" of filled areas, or natural soils exposed by excavating, at 90% of maximum density.

WALKS:

Compact the subgrade and each layer of fill material or backfill material per ODOT Item 203.

PAVEMENTS AND RIGHT OF WAY EMBANKMENT:

Compact the subgrade and each layer of fill material or backfill material per ODOT Item 203.

GRADING:

General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

PAVEMENT SUBBASE COURSE:

General: Subbase course consists of placing subbase material, in layers of specified thickness over subgrade surface to support a pavement base course.

Grade Control: During construction, maintain lines and grades including crown and cross–slope of subbase course.

Placing: Place subbase course material on prepared subgrade in layers of uniform thickness conforming to indicated cross–section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.

When a compacted subbase course is shown to be 6" thick or less, place material in a single layer. When shown to be more than 6" thick, place material in equal layers, except no single layer more than 6" or less than 3" in thickness when compacted.

MAINTENANCE:

Protection of Graded Areas: Protect newly graded areas from traffic or erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded and rutted areas to specific tolerances.

Reconditioning Compacted Areas: Where completed areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

DISPOSAL OF EXCESS AND WASTE MATERIALS:

Removal from Owner's Property: Remove waste materials, including unacceptable excavated material, excess excavated material, trash and debris, and dispose of it off owner's property.

ROCK CHANNEL PROTECTION:

All rock channel protection shall be in accordance with ODOT Item 601.09 Type A, B, C, or D as indicated on plans and shall be installed immediately after the installation of the pertinent storm structure, material shall be limestone or natural aggregate.

No concrete shall be allowed.

Comply with requirements of applicable sections for concrete work required in connection with sewer collection system work.

SECTION 4 – SEWER COLLECTION SYSTEM

PART I: GENERAL

RELATED DOCUMENTS:

All sewer work to be done in accordance with the County Uniform Standards for Sewerage Improvements and the City of Massillon requirements.

Drawings and general provisions of the contract, including general and supplementary conditions and specifications sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of sewer collection system work is shown on drawings.

Sewer collection system work includes, but is not limited to, the following:

* Storm sewer conduits
* Sanitary sewer conduits
* Manholes, frames and covers
* Catch basins, frames and gratings

Comply with the requirements of applicable sections for excavation and backfilling required in connection with sewer collection system work.

SANITARY SEWERS:

Clean Water Connections Prohibited: Roof drains, foundation drains, and other clean water connections to the sanitary sewer system are prohibited. Stark County Sanitary Engineer's inspection is required.

PART II: PRODUCTS

CONDUIT MATERIALS:

General: Furnish ells, tees, reducing tees, wyes, couplings, increasers, crosses, transitions and end caps of same type and class of material as conduit, or of material having equal or superior physical and chemical properties as acceptable to the engineer.

SANITARY SEWERS:

All sanitary sewer conduit shall be:

A. Polyvinyl chloride (PVC) ASTM D–3034 (SDR 35) with gaskets conforming to ASTM F 477 and joints per ASTM D–3212. The end of all sewer stubs shall be sealed with a plug or cap, the cost of which shall be included in the unit price bid for sanitary sewers.

**For sanitary sewers in excess of 13 feet deep, SDR 26 is required.

SANITARY WYE BRANCHES, RISERS AND CONNECTIONS (6" DIAMETER):

The material for all wye branches, risers, and connections shall conform to the following requirements:

1. Polyvinyl chloride (PVC) ASTM D–3034 (SDR 35) with gaskets conforming to ASTM F 477 and joints per ASTM D–3212. Wye branches shall be preformed wyes.

After the wye branch, riser, and connection have been installed, the end of the connection shall be sealed with an air tight spigot cap or air tight plug and the cap or plug shall be painted yellow. The height of the riser called out in the plans is the vertical change in elevation, however, payment shall be for the actual length of risers and connection. Complete in place, measured along the length of the pipe. The end of the sanitary connection shall be marked with a 2" x 2" hardwood stake, extending vertically from the end of the connection to a point approximately three feet above the surface of the ground.

CITY OF MASSILLON SANITARY SEWER NOTES:

1. Sanitary sewer and appurtenances shall be constructed according to city of Massillon Engineering Department specifications and details in effect at the time of construction.

2. Roof drains, foundation drains and other clean water connections to the sanitary sewer are prohibited.

3. The contractor shall notify all property owners along the route of the sanitary sewer at least three (3) days prior to start of construction.

4. The contractor shall alert the utilities protection service at least 48 hours prior to start of construction.

5. 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.

6. 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.

7. Bulkheads shall be erected in existing manholes were taps for new mainline sewers are made and shall remain in place until the new sewers are complete, tested and approved. In cases were 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.

8. Minimum vertical clearance between sanitary sewer and waterline shall be 18 inches. Minimum horizontal separation shall be 10 feet.

9. Sanitary sewer service laterals shall be 6–inch diameter and be laid at no less than 1.0% grade.

10. For new subdivision construction, sewer service laterals shall extend 12" into the lots or beyond furthest utility, whichever is greater, 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.

11. 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.

12. Minimum cover over sanitary sewer shall be 4 feet.

13. Acceptable sanitary sewer pipe materials are as follows:

		Specifications	
		Joint	Installation
Material Description	Pipe		
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
ABS Composite	ASTM D–2680	ASTM D–2235	ASTM D–2680
PVC Composite	ASTM D–2680	ASTM D–2564	ASTM D–2680

14. 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 videotaping procedure shall be in accordance with City of Massillon Engineering Department Specifications.

15. A deflection test shall be required for all flexible pipe of 8–inch diameter and larger. The test shall be conducted 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.

16. 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.

17. 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.

18. Connections to existing manholes shall be core drilled, with benches and channels formed and repaired as necessary.

19. Any manhole drop attachments shall be "outside" type.

20. 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.

21. Pre–construction meeting is required, contact City of Massillon Engineering Department at 330–830–1722 and Stark Soil and Water District at 330–830–7700.

22. Sanitary permits are required, contact the City of Massillon Engineering department for license and permit requirements.

STORM SEWERS:

Storm Conduit: All storm sewer conduit shall conform to the following requirement: Reinforced concrete pipe, ASTM C–76, "B" or "C" wall, 8 foot lengths.

All storm sewers shall have premium joints.

Unless otherwise noted on plans, all storm sewers shall be:

PVC ASTM 3034, SDR 35 or Polyethylene ADSN–12, or approved equal

Rear yard storm sewers maybe PVC smooth interior and corrugated exterior pipe in conformance with AASHTO M294 Type S (12"–30" diameter) and AASHTO M252, Type S (4"–10" diameter) or ASTM F667–97 (8"–24" diameter).

The end of all sewer stubs shall be bulkheaded, the cost of which shall be included in the unit price bid for storm sewers.

STORM WYE BRANCHES, RISERS AND CONNECTIONS (6" DIAMETER):

The material for all wye branches, risers, and connections shall conform to the following requirements:

1. Polyvinyl chloride (PVC) ASTM D–3034 (SDR–35) with gaskets conforming to ASTM F 477 and joints per ASTM D–3212 appropriate wye branches, boots or saddles shall be installed in cored holes in the storm sewer conduit.

The end of each connection shall be sealed with a tight fitting plug and the end of each connection shall be marked with a 2" x 2" hardwood stake, extending vertically from the end of the connection to a point approximately three feet above the surface of the ground.

UNCLASSIFIED PIPE UNDERDRAINS:

Underdrains shall be constructed in accordance with ODOT Item 605. Conduit shall be 4" or 6" diameter PSM Poly (vinyl chloride) (PVC) pipe conforming to ASTM D–3034 SDR–35, with an aggregate leveling course and cover as shown on plans.

STATE OF OHIO ENGINEER MATTHEW C. NEFF E–49050 REGISTERED PROFESSIONAL

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
GENERAL NOTES

Revisions										
Number										
Date										
Description										

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

Horizontal Scale	Vertical Scale
-	-
Original Submission	Last Plot Date
Feb 06, 2007	Apr 27, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 2 of 20

Drawing File: J:\7300–7399\7323 Massillon – Subd Site\7323.dwg Apr 27, 2007 – 11:35am

CONCRETE MANHOLES:

Concrete Base: Precast or cast-in-place, at contractor's option. Use concrete which will attain a 28 day compression strength of not less than 3000 PSI.

Precast Concrete Manholes: ANSI/ASTM C-478, sized as indicated.

Joints between manhole sections shall be provided with "O"-ring type neopreme rubber gaskets conforming to A.S.T.M. specification C-443. Sanitary sewer pipe passing through or connecting into the manhole shall be provided with a flexible watertight gasket and stainless steel band to allow for differential in settling between the manhole itself and the sewer pipe, to conform to A.S.T.M. spec. C-923.

MASONRY MATERIAL:

Concrete Masonry Units: ANSI/ASTM C-139

Manhole Brick: ANSI/ASTM C-32, Grade MS

Sewer Brick: ANSI/ASTM C-32, Grade SS

Masonry Mortar: ANSI/ASTM C-270, Type M

For minor amounts of mortar, packaged materials complying with ANSI/ASTM C-387, Type M, will be acceptable.

METAL ACCESSORIES:

Manholes Frames and Covers: Gray cast iron, ANSI/ASTM A-48, Class 30 B

Comply with requirements of FS RR-F-621 for type and style indicated.

Furnish covers with cast-in legend "storm" or "sanitary" on roadway face as required.

Manhole Steps: Gray cast iron, ANSI/ASTM A-48, Class 30 B, integrally cast into manhole side walls, unless otherwise indicated.

Polypropylene manhole steps will be permitted.

Catch Basin Frames and Gratings: Gray cast iron, ANSI/ASTM A-48, Class 30 B.

Comply with requirements of FS RR-F-621, for type and style required.

PART III: EXECUTION

INSTALLATION OF CONDUIT:

General: Install conduit in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated.

Inspect conduit before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

Lay conduit beginning at low point of a system, true to grades and alignment indicated with broken continuity of invert.

Place bell ends of clay conduit or groove end of concrete conduit facing upstream.

Install gaskets in accordance with manufacturer's recommendations for use of lubricants, cements and other special installation requirements.

Vitrified Clay Pipe: Install in accordance with applicable provisions of ASTM C-12, recommended practice for installing clay sewer pipe, unless otherwise indicated.

Concrete Pipe: Install in accordance with applicable provision of American Concrete Pipe Association "Concrete Pipe Field Manual", unless otherwise indicated.

Place circular concrete pipe with elliptical reinforcing so that reference lines indicating top of pipe are not more than 5 degrees from vertical plane through longitudinal axis of pipe.

Cleaning Conduit: Clear interior of conduit of dirt and other superfluous material as work progresses. Maintain swab or drag in line and pull past each joint as it is completed.

In large, accessible conduit, brushes and brooms may be used for cleaning.

Place plugs in ends of uncompleted conduit at end of each day or whenever work stops.

Flush lines between manholes if required to remove collected debris.

Interior Inspection: Inspect conduit to determine whether line displacement or other damage has occurred.

Make inspections after lines between manholes or manhole locations have been installed and approximately two feet of backfill is in place and at completion of project.

If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, correct such defects to satisfaction of engineer.

UNDERGROUND STRUCTURES:

Masonry Construction Manholes: At contractor's option, use either sewer brick or concrete masonry units to construct masonry manholes. Mix mortar with only enough water for workability, retempering of mortar will not be permitted. Keep mortar mixing and conveying equipment clean. Do not deposit mortar upon, or permit contact with the ground.

Lay masonry in mortar so as to form full bed with ends and side joints, not more than 5/8" wide. Protect fresh masonry from freezing and from too rapid drying.

Apply a 1/2" thick mortar coating on both interior and exterior wall surfaces.

Where manholes occur in pavements, set tops of frames and cover flush with finish surface. Elsewhere, set tops 3" above finish surface unless otherwise indicated.

Use an epoxy bonding compound where manhole steps are mortared into masonry walls.

Precast Concrete Manholes: Place precast concrete sections as shown on drawings. Where manholes occur in pavements, set tops of frames and covers flush with finish surface. Elsewhere, set tops 2" above finish surface, unless otherwise indicated.

Use epoxy bonding compound where manhole steps are mortared into manhole walls.

Provide rubber joint gasket complying with ASTM C-443.

Catch Basins: Construct catch basins to the sizes and shapes indicated. Precast alternates will be allowed subject to engineer approval.

Use concrete which will attain a 28 day compressive strength of not less than 3000 PSI.

Set cast iron frames and gratings to elevations indicated.

BACKFILLING:

General: Conduct backfill operations of open-cut trenches closely following laying, jointing and bedding of pipe, and after initial inspection and testing are completed.

For conduit under paved areas backfill shall be done with granular material and brought to the surface of the subgrade of the pavement.

TESTING:

Color Photography or VCR Television Inspection and Testing of Storm Sewers:
All inspection and testing shall be done by an experienced and qualified firm engaged in this type of work, as approved by the City of Massillon. Written reports for all inspection and testing shall be submitted to the owner for approval. All storm sewers television inspection shall be in accordance with the Massillon specifications. If the installation fails to meet the requirements of these tests and inspections, the contractor shall repair or replace all defects and re-test the installation.

For 48" and larger pipe, visual inspection may be performed in lieu of color photography or VCR television inspection.

Color Photography or VCR Television Inspection and Testing of Sanitary Sewers:
All inspection and testing shall be done by an experienced and qualified firm engaged in this type of work, as approved by the City of Massillon. Written reports for all inspection and testing shall be submitted to the owner and the City of Massillon for approval. All sanitary sewers must be flushed and pass the latest proposed low pressure air test requirements and deflection test requirements of the Ohio Environmental Protection Agency and the City of Massillon. The maximum deflection allowed is 5%. The maximum leakage allowed is 100 gallons per inch of pipe diameter per mile of sewer per day. All sanitary sewers must also have a color photography or VCR television inspection in accordance with the City of Massillon specifications. All final testing and inspections shall be performed after completion of pavement construction and seeding of disturbed areas, but prior to the issuance of building permits. If the installation fails to meet the requirements of these tests and inspections, the contractor shall repair all defects and retest the installation.

Deflection Test:
a. Deflection test shall be performed on all flexible pipe. The test shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system.
b. No pipe shall exceed a deflection of 5 percent. If deflection exceeds 5 percent, replacement or correction shall be accomplished in accordance with requirements in the approved specifications.
c. The rigid ball or mandrel used for the deflection test shall have a diameter not less that 95 percent of the base inside diameter or average inside diameter of the pipe depending on which is specified in the ASTM Specification, including the appendix, to which the pipe is manufactured. The test shall be performed without mechanical pulling devices.

Hydrostatic Test:
The leakage exfiltration or infiltration shall not exceed 100 gallons per inch of pipe diameter per mile per day (0.02 m3/mm of pipe dia./km/day) for any section of the system. An exfiltration or infiltration test shall be performed with a minimum positive head of 2 feet (600 mm).

Air Test:
The air test shall, as a minimum, conform to the test procedure described in ASTM C-828 for clay pipe, ASTM C-924 for concrete pipe, ASTM F-1417 for plastic pipe, and for other materials test procedures approved by the regulatory agency.

Manhole Test:
All manholes to be vacuum tested as per ASTM-C-1244.
All testing shall be witnessed by a Municipal sanitary official.

SECTION 5 - PORTLAND CEMENT CONCRETE PAVING

PART I: GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of contract, including general and supplementary conditions and specification sections, apply to work specified in this section.

DESCRIPTION OF WORK:

Extent of Portland cement concrete paving is shown on drawings, including curbs and gutters.

Prepared subbase is specified in Section 3, "Earthwork".

QUALITY ASSURANCE:

"State Specifications" as used herein refer to the State of Ohio Department of Highways Construction and Material Specifications, 2002 edition, referred to as ODOT.

SUBMITTALS:

Furnish samples, manufacturer's product data, test reports, and materials certifications as required in referenced sections for concrete and joint fillers and sealers.

JOB CONDITIONS:

Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
Utilize flagmen, barricades, warning signs and warning lights as required.

PART II: PRODUCTS

MATERIALS:

Forms: Steel of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.

Use flexible spring steel forms to form radius bends as required.

Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.

Concrete materials shall conform to "State Specifications" Item 451, Modified Class "C" unless otherwise specified.

Portland cement shall be ASTM C-175-67, 1A which will produce 6% plus or minus 1% of entrained air.

Aggregate shall meet the requirements of "State Specifications", Item 703.02. Coarse aggregate shall be crushed limestone only.

Water shall be clear and free from injurious amounts of oils, acid, alkalis, organic materials or other deleterious substance, for human consumption.

Membrane curing and sealing compound shall conform to ASTM C-309.

Reinforcing steel shall conform to ASTM A-615, Grade 60.

Poured joint filler shall be of non-extruding bituminous type meeting ASTM specifications D 1751-65 and conform to AASHTO specifications M-173.

PROPORTIONING AND MIXING CONCRETE:

All concrete shall be proportioned and mixed in accordance with the applicable requirements of "State Specifications", Item 499.

All concrete shall be tested for compliance with this specification.

PART III: EXECUTION

SURFACE PREPARATION:

Remove loose material from compacted subbase surface immediately before placing concrete.

Proof roll prepared surface to check for unstable areas and need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving.

FORM CONSTRUCTION:

Set forms to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.

Check completed form work for grade and alignment to following tolerances:

* Top of forms not more than 1/8" in 10'
* Vertical face on longitudinal axis not more than 1/4" in 10'

Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage.

REINFORCEMENT:

Locate and place reinforcement as detailed on the drawings.

CONCRETE PLACEMENT:

Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

Bedding: To be No. 57 limestone or aggregate compacted to the depth indicated on the typical sections.

Place concrete using methods which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.

Deposit and spread concrete in a continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2 hour, place a construction joint.

While being deposited the concrete shall be vigorously manipulated with spades or other suitable tools to prevent the formation of voids, or honey combed sections. Special attention shall be given to the compacting of the concrete against forms, curbs, castings and joints.

In the event of an interruption in the delivery of concrete or any mechanical malfunction a transverse construction joint shall be formed as specified. Any concrete which has been delivered in quantities in excess of that needed to form this intermediate joint shall not be used.

Unless otherwise specified, concrete when deposited shall have a temperature of not less than 50°F, nor more than 90°F. In freezing weather, suitable means shall be provided for maintaining the concrete at a temperature of 45°F for a period of not less than seven (7) days. Construction must stop if the temperature falls to 36°F. No frozen materials shall be used in the concrete nor shall concrete be laid on frozen ground. Any concrete which may be damaged by frost action shall be replaced by the contractor at his own expense.

Weakened-Plane (Contraction) Joints: Provide weakened-plane (contraction) joints, sectioning concrete into areas as shown on drawings. Construct weakened-plane joints for a depth equal to at least 1/4 concrete thickness, as follows:

Tooled Joints: Form weakened-plane joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.

Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for a period of more than 1/2 hour, except where such placements terminate at expansion joints. Construction joints as shown.

Expansion Joints: Provide pre molded joint filler for expansion joints abutting catch basins, manholes, inlets, structures, walks and other fixed objects unless otherwise indicated.

Extend joint fillers full width of joint, and not less than 1/2" or more than 1" below finished surface where joint sealer is indicated. If no joint sealer, place top of joint filler flush with finished concrete surface.

Furnish joint fillers in one-piece lengths for full width being placed whenever possible. Where more than one length is required, lace or clip joint filler sections together.

Protect top edge of joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.

CONCRETE FINISHING:

After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.

After floating, test surface for trueness with 10' straight edge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.

Curbs and Gutters: Automatic machine may be used for curb and gutter placement at contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results which meet or exceed minimums specified. Machine placement must produce curbs and gutters to required cross-section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.

JOINTS:

General: Construct expansion, weakened-plane (contraction), and construction joints true-to-line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated.

When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.

Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to 1/2" radius, unless otherwise indicated. Eliminate tool marks on concrete surface.

After completion of floating and troweling when excess moisture or surface sheen has disappeared complete surface finishing, as follows.

Broom finish, by drawing a fine-hair broom across concrete surface, perpendicular to line of traffic. Repeat operation if required to provide a fine line texture acceptable to engineer.

Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by engineer.

CURING:

Curing material shall be applied at the rate of one gallon per 300 square feet and in strict accordance with the manufacturer's directions. Do not use liquid membrane curing compound where anti-spalling treatment is to be applied.

REPAIRS AND PROTECTIONS:

Repair or replace broken or defective concrete, as directed by engineer.

Drill test cores where directed by engineer when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy resin grout.

Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur. Sweep concrete pavement and wash free of stains, discoloration, dirt and other foreign material just prior to final inspection.

UTILITY MARKINGS:

Paving contractor shall emboss utility locations on curbs after completion of pavement.

SECTION 6 - ASPHALT CONCRETE PAVING

PART I: GENERAL

RELATED DOCUMENTS

Drawings and general provisions of contract, including general and supplementary conditions and specifications sections, apply to work of this section.

DESCRIPTION OF WORK

Extent of asphalt concrete paving work is shown on drawings.

Prepared aggregate subbase is specified in Section 3, "Earthwork".

SUBMITTALS

Material Certificates: Provide copies of materials certificates signed by material producer and contractor, certifying that each material item complies with, or exceeds, specified requirements. No recycled asphalt is permitted on this project.

JOB CONDITIONS

Weather Limitations: Apply prime and tack coats when ambient temperature is above 50°F (10°C), and when temperature has not been below 35°F (1°C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

Construct asphalt concrete surface course when atmospheric temperature is above 40°F (4°C) and when base is dry. Base course may be placed when air temperature is above 30°F (-1°C) and rising.

Grade Control: Establish and maintain required lines and elevations.

QUALITY ASSURANCES

"State Specifications" as used herein refer to the State of Ohio Department of Highways Construction and Material Specifications, 2002 editions, referenced to as ODOT.

PART II: PRODUCTS

MATERIALS

General: Use locally available materials and gradations which exhibit a satisfactory record of previous installations. Pavement materials shall meet the requirements of the following ODOT Items:

Aggregate base course: ODOT Item 304

Bituminous aggregate base: ODOT Item 301

Asphalt Concrete Surface course: ODOT Item 448 Surface Medium

Striping paint shall be white, chlorinated rubber base traffic lane marking paint, factory mixed, quick-drying and non-bleeding, if required.

PART III: EXECUTION

SUBGRADE INSPECTION

Paving contractor must examine the areas and conditions under which pavement is to be installed. Notify the engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the engineer. Coordinate inspection with the engineer.

SURFACE PREPARATION

Remove loose material from compacted subbase surface.

Proof roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.

Notify engineer of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive base course aggregate.

PAVEMENT COURSES

Aggregate base course for pavement shall be 6" in thickness after compaction, as indicated on the drawings, and placed on the prepared subbase in accordance with state specifications Item 304 "Aggregate Base". After completion of base course, it shall be checked for irregularities in grade at approximately 25 foot intervals, and all high spots or depressions shall be corrected before bituminous intermediate course is installed. The base course shall be place in two 3" thick layers.

Bituminous aggregate base course for pavement shall be 4" in thickness after compaction, as indicated on the drawings, and placed on the prepared subbase in accordance with state specifications Item 301 "Bituminous Aggregate Base". The base course shall be placed in one 4" thick layer.

Surface course shall be 1-1/2" thickness after compaction, as indicated on the drawings, placed on the prepared aggregate base course course in accordance with state specification Item 448 Surface. Spreading and finishing of open areas shall be done with a barber green spreader, or approved equal to secure accurate surface grades which will conform in all respects to those indicated on the grading plan.

There shall be an Item 407, Tack Coat, applied prior to Item 448 surface and intermediate courses unless otherwise directed by the engineer.

FIELD QUALITY CONTROL

Test the in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by the engineer.

In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness.

Subbase and base courses: 1/4" ±

Leveling and wearing courses: 3/16" ±

Test finished surface of each asphalt concrete course for smoothness, using 10'-0" straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the above tolerances for smoothness.

Check surfaced areas at intervals as directed by the engineer.

MISCELLANEOUS NOTES

Contractor to verify condition of existing storm sewer pipe tying into existing sewer. The engineer shall inspect such condition and verify adequacy. Contractor shall follow engineer's request to use or replace such pipe to new catch basins.

CITY OF MASSILLON GENERAL NOTES:

1. CONTRACTOR SHALL CHECK DETAIL DRAWINGS FOR MINIMUM GRADE AND BACKFILL REQUIREMENTS.

2. ALL COMBINATION CONCRETE CURB AND GUTTER TO BE MASSILLON STANDARD EXCEPT WHERE VARIATIONS ARE TO BE EXTENDED OR MET. SE SPECIFICATION BOOK AND PLANS.

3. EXCAVATION FOR CONCRETE CURB AND GUTTER SHALL BE INCLUDED IN THE COST PER LINEAL FOOT OF SAID CURB AND GUTTER.

4. ALL CATCH BASINS AND MANHOLES TO BE ADJUSTED TO GRADE WHERE NECESSARY.

5. ALL CONCRETE TO BE 1:2: 4-6 BAG MIX. 28 DAY - 3000 PSI COMPRESSIVE STRENGTH: MAX. SLUMP TO BE 4".

6. ALL MATERIALS USED WILL BE NEW - NO SALVAGED MATERIALS WILL BE ACCEPTED, EXCEPT CASINGS, AS APPROVED.

7. 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.

8. 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 COMPACTION TO BE DONE BEFORE FORMS ARE PLACED.

9. CONTRACTOR TO BACKFILL CURB IMMEDIATELY AFTER CURB HAS BEEN IN PLACE FOR 24 HOURS.

10. 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 WITH 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 SHAL BE TYPE 'C' CONDUIT IN ACCORDANCE WITH O.D.O.T. 603 WITH CLASS 'C' BEDDING AND SUITABLE SOIL BACKFILL.

11. 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 THE FURTHEST UTILITY, WHICHEVER IS GREATER.

12. 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.

13. MANHOLES AND CATCH BASINS SHALL BE CONSTRUCTED IN CONFORMANCE WITH MASSILLON CITY STANDARDS.

14. CONTRACTOR SHALL CONTACT THE CITY OF MASSILLON ENGINEERING DEPARTMENT (GREG McCUE) AT (330) 830-1722 AT LEAST 2 DAYS PRIOR TO THE INITIATION OF CONSTRUCTION TO SCHEDULE A PRE-CONSTRUCTION MEETING.

15. 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 SHALL ALSO BE RESPONSIBLE FOR STOP SIGNS AND DIRECTIONAL SIGNS AS NECESSARY. AL SIGNS SHALL CONFORM WITH THE CITY OF MASSILLON REGULATIONS.

16. WHEN SPECIFIED ON THE PLANS OR SP[ECIFICATIONS, 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 CITY 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.

16a. 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.

16b. 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 CPNTRACTOR AND PAID FOR BY THE DEVELOPER UNTIL SUCH COPNDITIONS ARE CORRECTED AND APPROVED BY THE CITY OF MASSILLON ENGINEER.

16c. SUBGRADE TESTING OR PROOF ROLLING MUST BE WITNESSED AND APPROVED BY THE CITY OF MASSILLON ENGINEERING DEPARTMENT PRIOR TO PLACEMENT OF THE PAVEMENT SUBBASE MATERIAL. CONTRACTOR SHALL CONTACT THE CITY ENGINEERING DEPARTMENT AT (330) 830-1722

17. AS BUILT DRAWINGS ARE REQUIRED AND SHALL BE SUBMITTED TO THE CITY OF MASSILLON ENGINEERING DEPARTMENT UPON COMPLETION OF THE PROJECT.

18. CURBS SHALL BE DROPPED FOR HANDICAP RAMPS AT ALL INTERSECTIONS. SEE THE INTERSECTION DETAILS FOR THE GENERAL LOCATION OF THE RAMPS AND PAVEMENT DETAIL SHEET FOR A HANDICAP RAMP DETAIL.

19. THE CONTRACTOR SHALL NOTIFY THE CITY OF MASSILLON FORE DEPARTMENT, POLICE DEPARTMENT, CITY ENGINEER AND LOCAL (MASSILLON TUSLAW, JACKSON AND PERRY) SCHOOL DIRECTOR AT LEAST 48 HOURS IN ADVANCE OF ANY STREET CLOSING OR TRAFFIC CHANGE.

STATE OF OHIO ★ ENGINEER ★ MATTHEW NEFF E-49060 REGISTERED PROFESSIONAL

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
GENERAL NOTES

Revisions Number	Date	Description

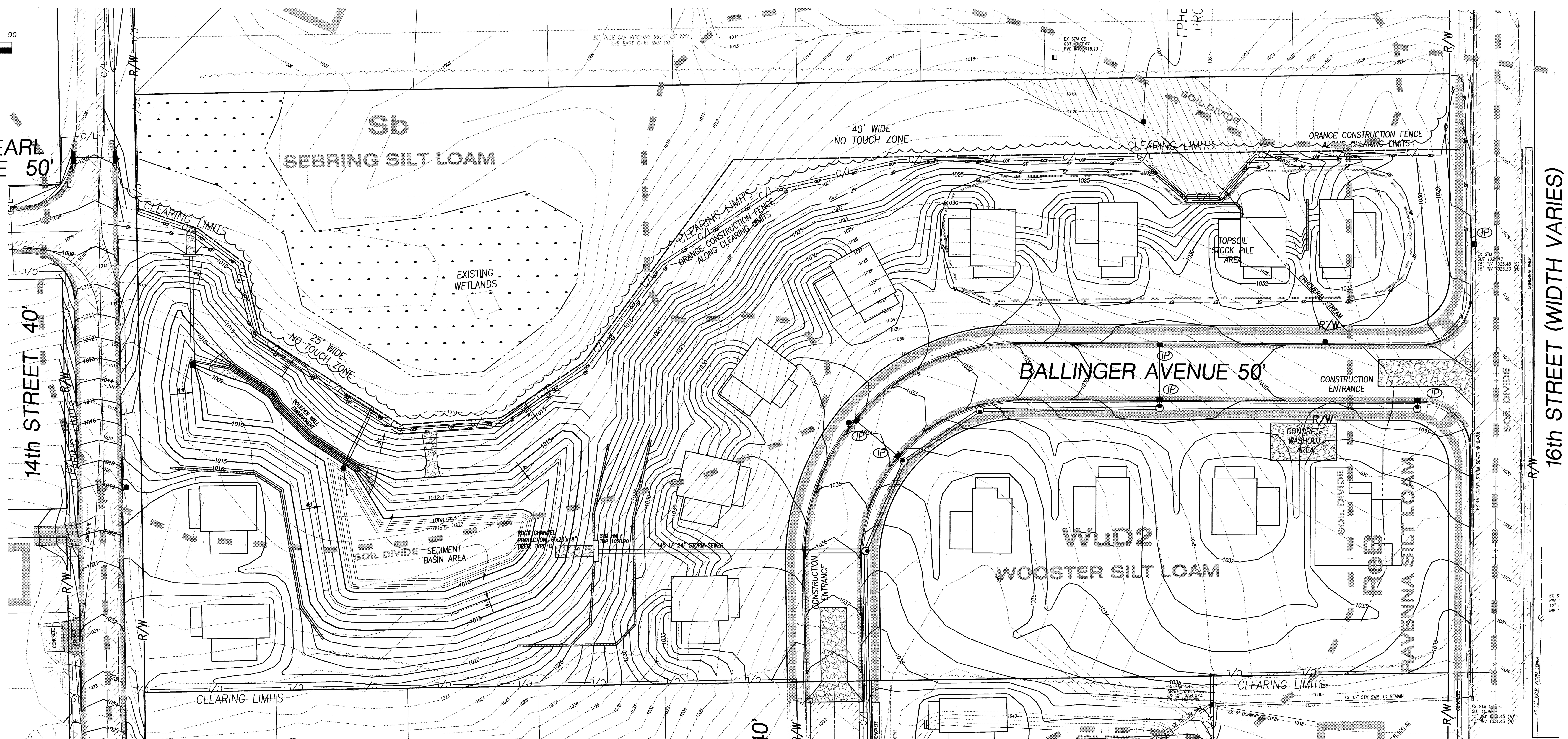
PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

N

Horizontal Scale	Vertical Scale
-	-
Original Submission	Last Plot Date
Feb 06, 2007	Apr 27, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 3 of 20

SCALE: 1" = 30'



STORM WATER POLLUTION PREVENTION PLAN NARRATIVE:

SITE DESCRIPTION INFORMATION

THE CONSTRUCTION ACTIVITIES FOR THIS PROJECT INCLUDE THE PARTIAL CLEARING OF A 5.12 ACRE PARCEL OF LAND, INSTALLATION OF NEW ROADWAY, 14 NEW SINGLE FAMILY HOMES, FILLING AN EXISTING DETENTION BASIN AND REROUTING ITS VOLUME TO A NEW DETENTION BASIN, REGRADING OF LAND AND ALL APPURTENANCES.

TOTAL ON SITE DISTURBED AREA 3.84 Acres

PRIOR LAND USE FOR THE SITE CONSISTS OF HERBACEOUS LAND WITH DENSE TREES AND BRUSH.

PRE–CONSTRUCTION CHARACTERISTICS: 3.84 ACRES OF HERBACEOUS LAND WITH DENSE TREES AND BRUSH

POST–CONSTRUCTION CHARACTERISTICS: 0.97 ACRES IMPERVIOUS AREAS
2.87 ACRES OF GRASS YARD

ESTIMATED IMPERVIOUS AREA: 0.97 Acres
ESTIMATED PERCENT IMPERVIOUS AREA: 25 %

SITE SOIL TYPES:
ReB RAVENNA SILT LOAM, HYDROLOGIC GROUP C
Sb SEBRING SILT LOAM, HYDROLOGIC GROUP B/D
WuD2 WOOSTER SILT LOAM, HYDROLOGIC GROUP C

–THE STORM SEWER FOR THE PROJECT DISCHARGES TO AN UNNAMED TRIBUTARY OF THE TUSCARAWAS RIVER.

–THE PROPOSED CONSTRUCTION ACTIVITIES WILL PRODUCE A NEW 5.36 ACRE WATERSHED AND REROUTING AN EXISTING 7.68 ACRE WATERSHED (TOTAL OF 13.04 ACRES) THAT DRAINS INTO THE PROPOSED STORM SEWER SYSTEM THAT DISCHARGES TO THE ABOVE NAMED POINT.

–PERMANENT WATER QUALTIY VOLUME AND BASIN QUANTITY VOLUME IS DESIGNED FOR THE TOTAL 13.04 ACRE WATERSHED.

CONSTRUCTION NOTES

DEWATERING OPERATIONS MUST CONVEY SEDIMENT–LADEN FLOWS TO A SEDIMENT SETTLING POND OR OTHER EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE PRIOR TO BEING DISCHARGED FROM THE CONSTRUCTION SITE.

YARD INLET PROTECTION IS REQUIRED IN ALL PROPOSED TURF AREAS.

THE SEDIMENT BASIN AND SILT FENCE SHALL BE INSTALLED PRIOR TO GRADING AND WITHIN 7 DAYS FROM THE START OF GRUBBING.

IMPLEMENTATION SCHEDULE

1) CONSTRUCTION ENTRANCE AND DRIVE TO BE ESTABLISHED AS SHOWN ON THE PLANS. SEE DETAIL.
2) ORANGE CONSTRUCTION FENCE TO BE INSTALLED ALONG NO TOUCH ZONES.
3) SILT FENCE SHOULD BE INSTALLED AS SHOWN ON THE PLANS. SEE DETAIL.
4) SEDIMENT BASIN AND/OR TRAPS TO BE CONSTRUCTED AS SHOWN ON THE PLANS. SEE DETAIL.
5) MARK TREES AND BUFFER AREAS FOR PRESERVATION. IMPLEMENT MAJOR CLEARING AND GRADING. CLEAR BORROW AND DISPOSAL AREAS AS NEEDED.
6) TEMPORARY OR PERMANENT STABILIZING MEASURES SHOULD BE APPLIED IMMEDIATELY TO ANY DISTURBED AREAS WHERE WORK HAS BEEN EITHER COMPLETED OR DELAYED.
7) DUST CONTROL SHALL BE IMPLEMENTED AS SITE CHARACTERISTICS WARRANT. SEE NOTES ON DUST CONTROL.
8) DURING CONSTRUCTION, INSTALL ANY EROSION AND SEDIMENTATION CONTROL MEASURES THAT ARE NEEDED.
9) AS CATCH BASINS ARE INSTALLED, INLET PROTECTION SHALL BE INSTALLED. SEE DETAIL.
10) LANDSCAPING AND FINAL STABILIZATION – TOPSOIL, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING, SODDING AND RIPRAP. ALL OPEN AREAS, INCLUDING BORROW AND SPOIL AREAS, SHOULD BE STABILIZED. TEMPORARY CONTROL MEASURES SHOULD BE REMOVED OR STABILIZED AS REQUIRED.
11) ONCE VEGETATION IS ESTABLISHED IN DETENTION BASIN AREA AND SEDIMENT AREA IS NO LONGER NEEDED, TEMPORARY OUTLET IS TO BE PLUGGED AT BOTH ENDS. UPSTREAM AND DOWNSTREAM ENDS TO BE BURIED IN EMBANKMENT.

POST CONSTRUCTION BMPS

1) CATCH BASINS WITH SUMPS WILL BE INSTALLED AND WILL REMOVE THE LARGER CONTAMINANTS.
2) THE CITY OF MASSILLON SHALL CLEAN ALL INLET BASINS OF SEDIMENT AND DEBRIS ON A REGULAR SCHEDULE TO MAINTAIN PROPER STORM SEWER INFRASTRUCTURE PERFORMANCE.
3) GRASSED SWALES ARE CONSTRUCTED IN YARDS BECAUSE THEY ARE COST EFFECTIVE AND WILL DRAIN STORM WATER TO THE STORM SEWER SYSTEM OR THE DETENTION BASIN.
THEY ALSO ALLOW FOR INFILTRATION INTO THE SOIL TO HELP REPLENISH UNDERGROUND WATER TABLES.
4) A DRY DETENTION BASIN WAS CONSTRUCTED BECAUSE IT WILL PROVIDE FLOOD CONTROL WHILE ALLOWING PARTICLES AND ASSOCIATED POLLUTANTS TO SETTLE BEFORE LEAVING THE SITE. IT ALSO ALLOWS FOR INFILTRATION INTO THE SOIL TO HELP REPLENISH UNDERGROUND WATER TABLES.

EPA PHASE II STORM WATER MANAGEMENT SUMMARY

TEMPORARY EROSION CONTROL								
ONSITE AREA (ACRES) A	TEMP SEDIMENT VOL. REQD. 1000 CF/AC	TEMP SEDIMENT VOLUME PROVIDED	REQ'D TEMP SEDIMENT VOLUME MET AT ELEVATION	TOTAL AREA (ACRES) A	DEWATERING VOL. REQD. 1800 CF/AC	DEWATERING VOLUME PROVIDED	REQ'D DEWATERING VOLUME MET AT ELEVATION
5.36 AC	5,360 CF	5617 CF	1008.5	13.04 AC	23472 CF	23670 CF	1012.3

PERMANENT WATER QUALITY						
AREA (ACRES) A	RAINFALL DEPTH P	SITE RUNOFF COEFFICIENT C	PERMANENT WQV REQUIRED (CAP/12)*43560	PERMANENT WQV PROVIDED	HIGH WATER ELEVATION	DRAW DOWN TIME (HOURS)
13.04 AC	0.75 INCHES	0.30	10650 CF	27952 CF	1012.89	48

LEGEND

EX SAN MANHOLE
EX STORM MANHOLE
EX CATCH BASIN
EX HYDRANT
EX WATER LINE VALVE
EX WATER SERVICE VALVE
EX WATER MANHOLE
EX WATER METER
UTILITY POLE
UTILITY POLE w/TRANSFORMER
LIGHT POLE
GUY ANCHOR
CHAIN LINK FENCE
WOOD FENCE
GAS LINE MARKER
GAS VALVE
GAS METER
ELECTRIC GROUND TRANSFORMER
CABLE TV PEDESTAL
ELECTRIC MANHOLE
ELECTRIC METER
DECIDUOUS TREE
CONIFEROUS TREE
OCF — ORANGE CONSTRUCTION FENCE
SF — SILT FENCE

STATE OF OHIO ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
STORMWATER POLLUTION PREVENTION PLAN

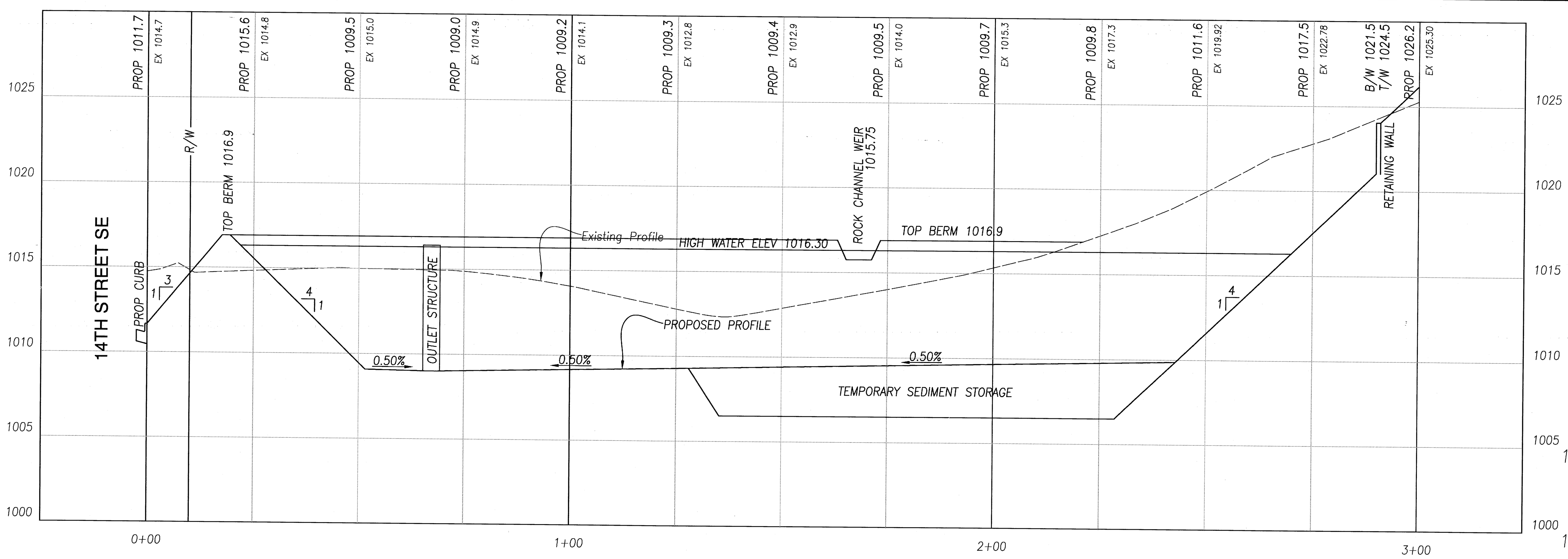
Revisions		
Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesigngroup
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale 1" = 30'	Vertical Scale -
Original Submission Feb 06, 2007	Last Plot Date Apr 30, 2007
Drawn By DLN	Checked By
Project Number 7323	Field Crew FS & BH

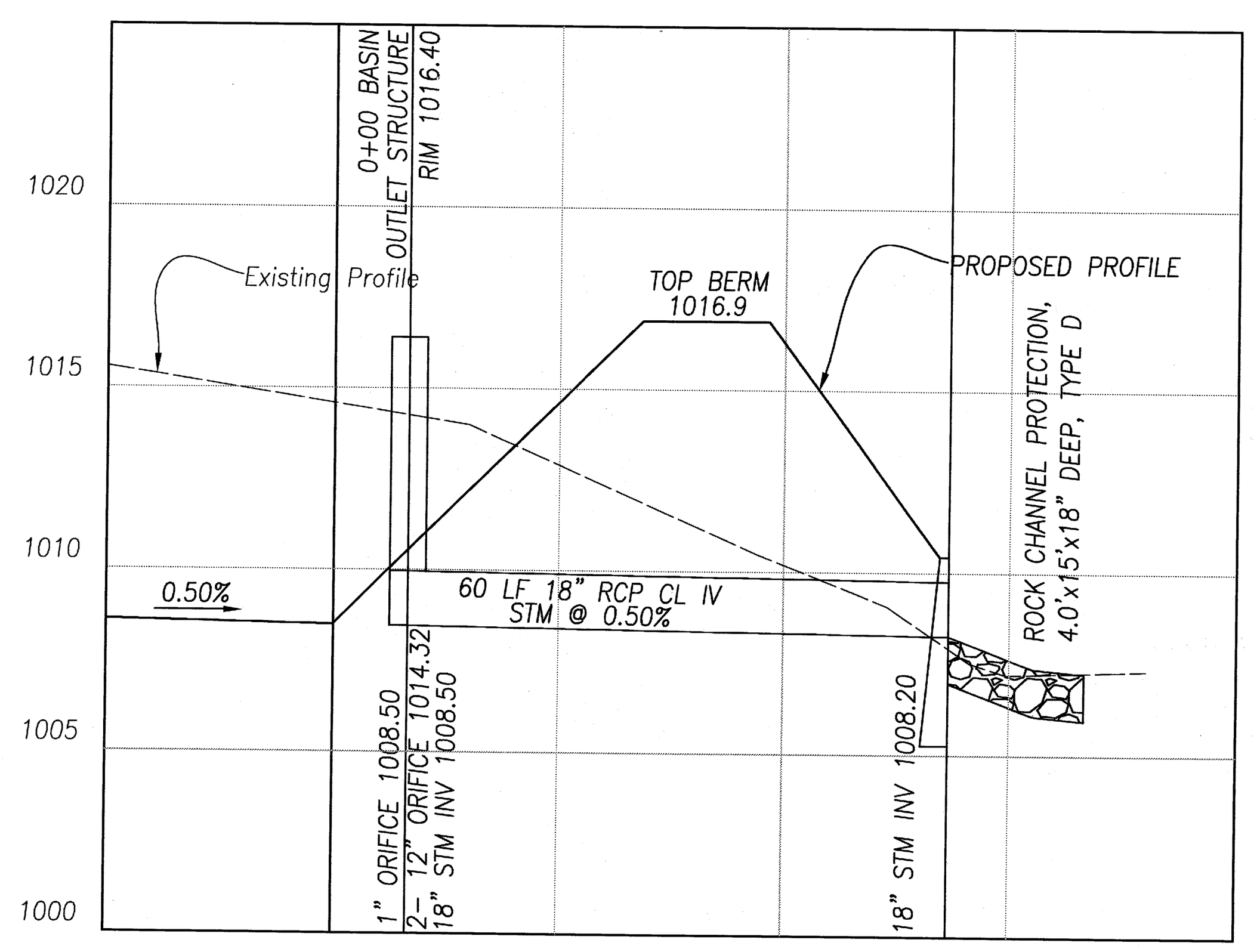
Sheet 4 of 20

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Apr 30, 2007 - 12:25pm

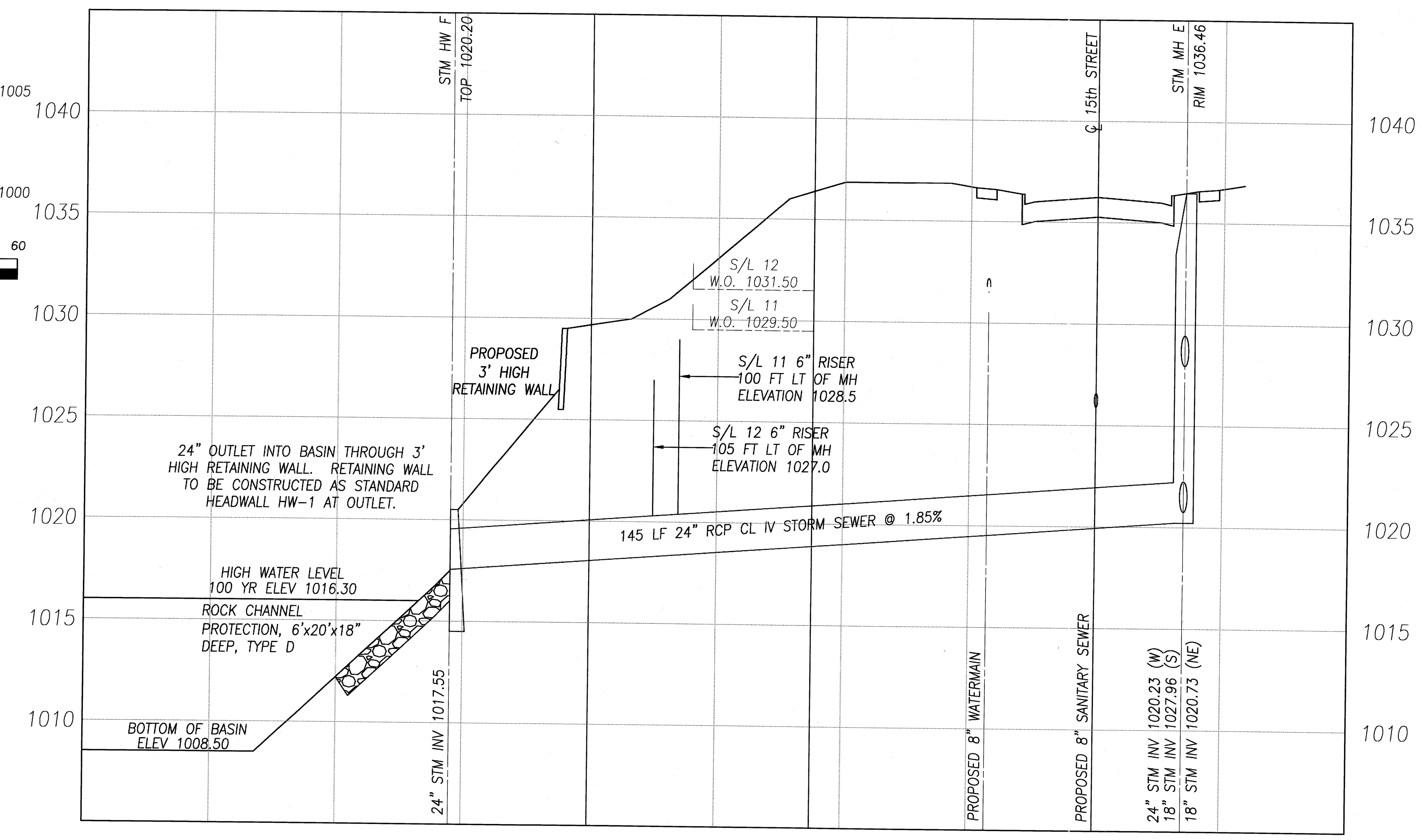


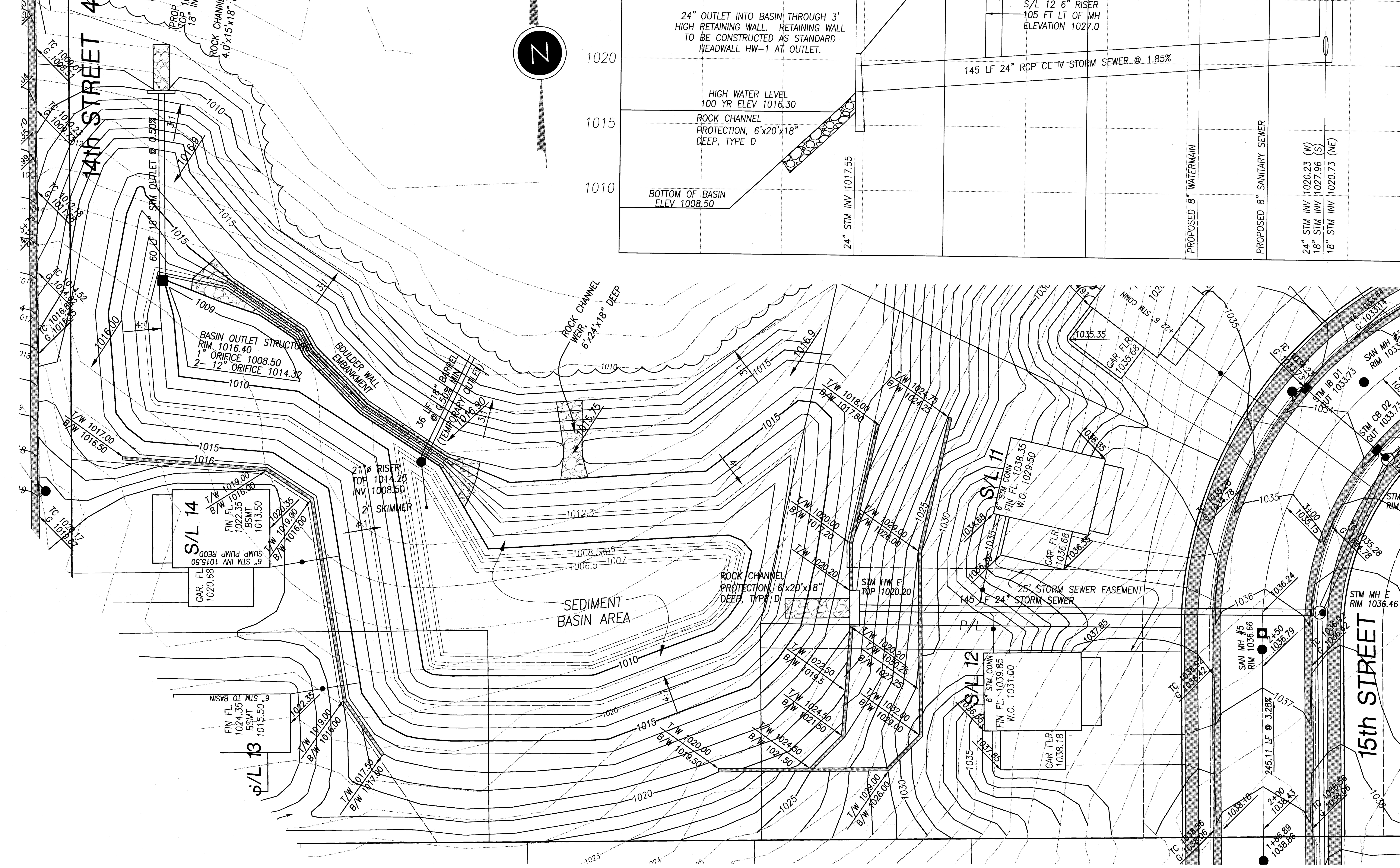
DETENTION BASIN CROSS SECTION

SCALE: 1" = 20'



BASIN OUTLET





STATE OF OHIO
MATTHEW C. NEFF
E-49050
REGISTERED
PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
DETENTION BASIN PLAN

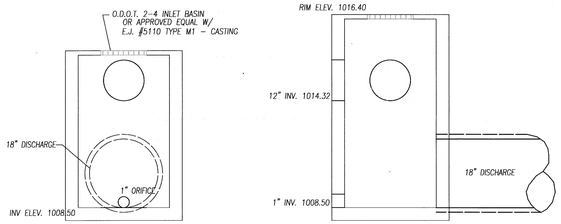
Revisions Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesigngroup
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

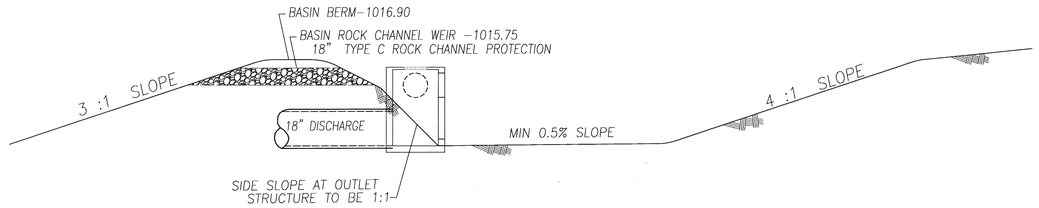
Horizontal Scale	Vertical Scale
1" = 20'	1" = 5'
Original Submission	Last Plot Date
Feb 06, 2007	May 02, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 5 of 20

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg May 02, 2007 - 11:57am

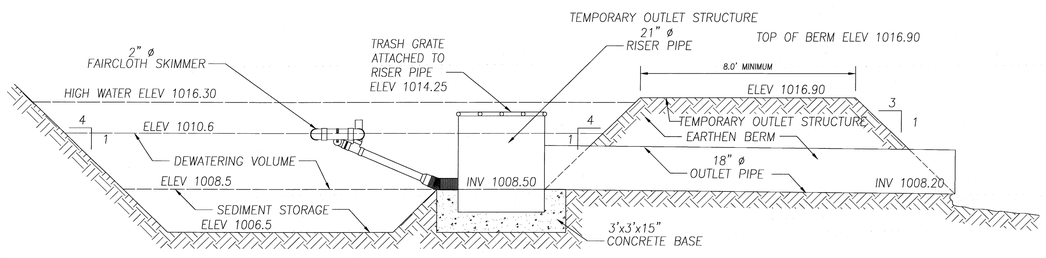


DETENTION BASIN OUTLET STRUCTURE



DETENTION BASIN DETAIL

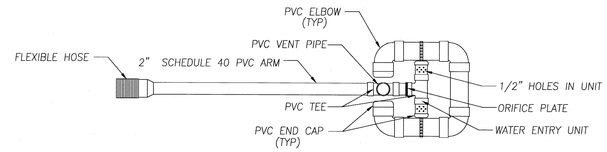
NOT TO SCALE



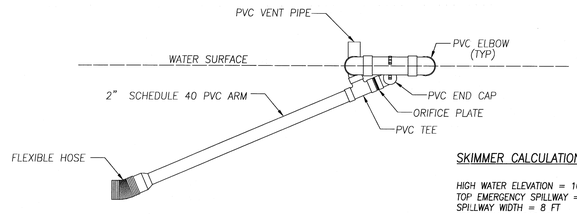
WHEN ALL IMPROVEMENTS ARE 90% COMPLETE, CONTRACTOR SHALL REMOVE 21" RISER PIPE, CONCRETE BASE AND FAIRCLOTH SKIMMER FROM BASIN. CUT 18" OUTLET PIPE INTO BERM, SEAL WITH GROUT AND GRADE OVER AT BOTH ENDS.

SEDIMENT BASIN DETAIL

NOT TO SCALE



TOP VIEW



SIDE VIEW

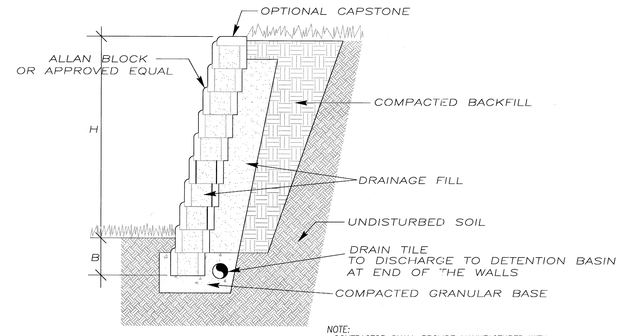
FAIRCLOTH SKIMMER DETAIL

WWW.FAIRCLOTHSKIMMER.COM
(919) 732-1244

SKIMMER CALCULATIONS

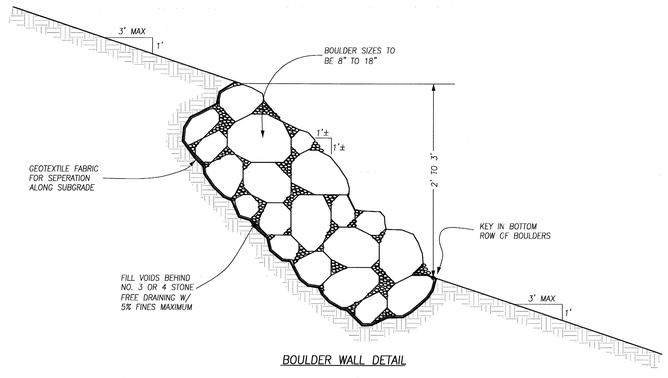
HIGH WATER ELEVATION = 1015.45
TOP EMERGENCY SPILLWAY = 1015.25
SPILLWAY WIDTH = 8 FT
TOP BERM = 1016.00

SEDIMENT STORAGE INVERT = 1006.50
DEWATERING INVERT = 1008.50
FAIRCLOTH SKIMMER = 2" ø
RISER = 21" ø
BARREL SIZE = 18" ø
RISER CONCRETE BASE = 3'x3'x15"



NOTE:
CONTRACTOR SHALL PROVIDE MANUFACTURER WITH GEOTECHNICAL REPORT. MANUFACTURER SHALL PROVIDE RETAINING WALL CALCULATIONS AS PART OF SHOP DRAWING APPROVAL TO THE CITY OF MASSILLON.

RETAINING WALL



BOULDER WALL DETAIL

STATE OF OHIO ★ ENGINEER ★ PROFESSIONAL
MATTHEW C. NEFF
E-49050
REGISTERED

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
DETENTION BASIN DETAILS

Revisions
Number | Date | Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFF design group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

Horizontal Scale	Vertical Scale
1" = 20'	-
Original Submission	Last Plot Date
Feb 06, 2007	Apr 30, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 6 of 20

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Apr 30, 2007 - 12:21pm

TEMPORARY SEEDING			
SEEDING DATES	SPECIES	SEEDING RATE LB./1,000 SQ FT	SEEDING RATE LB./AC.
MARCH 1 TO AUGUST 15	OATS	3	128 (4 BUSHEL)
	TALL FESCUE	1	40
	ANNUAL RYEGRASS	1	40
	PERENNIAL RYEGRASS	1	40
	TALL FESCUE	1	40
	ANNUAL RYEGRASS	1	40
	ANNUAL RYEGRASS	1.25	55
	PERENNIAL RYEGRASS	3.25	142
	CREEPING RED FESCUE	0.4	17
	KENTUCKY BLUEGRASS	0.4	17
	OATS	3	128 (3 BUSHEL)
	TALL FESCUE	1	40
	ANNUAL RYEGRASS	1	40
AUGUST 16 TO OCTOBER 31	RYE	3	112 (2 BUSHEL)
	TALL FESCUE	1	40
	ANNUAL RYEGRASS	1	40
	WHEAT	3	120 (2 BUSHEL)
	TALL FESCUE	1	40
	ANNUAL RYEGRASS	1	40
	PERENNIAL RYEGRASS	1	40
	TALL FESCUE	1	40
	ANNUAL RYEGRASS	1	40
	ANNUAL RYEGRASS	1.25	40
	PERENNIAL RYEGRASS	3.25	40
	CREEPING RED FESCUE	0.4	40
	KENTUCKY BLUEGRASS	0.4	
NOVEMBER 1 TO FEBRUARY 29	USE MULCH ONLY OR DORMANT SEEDING		

NOTE: OTHER APPROVED SEED SPECIES MAY BE SUBSTITUTED

NOTES:
TEMPORARY SEEDING PROVIDES EROSION CONTROL ON AREAS IN BETWEEN CONSTRUCTION OPERATIONS. GRASSES WHICH ARE QUICK GROWING ARE SEEDED AND USUALLY MULCHED TO PROVIDE PROMPT TEMPORARY SOIL STABILIZATION. IT EFFECTIVELY MINIMIZES THE AREA OF A CONSTRUCTION-SITE PRONE TO EROSION AND SHOULD BE USED EVERYWHERE THE SEQUENCE OF CONSTRUCTION OPERATIONS ALLOWS VEGETATION TO BE ESTABLISHED.

MAINTENANCE:
TEMPORARY SEEDING SHOULD BE APPLIED ON DISTURBED AREAS WITHIN 7 DAYS IF THE AREA IS INTENDED TO BE DORMANT FOR GREATER THAN 21 DAYS OR WITHIN 2 DAYS IF THE AREA IS WITHIN 50 FEET OF JURISDICTIONAL WATER. THE TEMPORARY SEED MIX SHALL BE AN EQUAL MIXTURE OF PERENNIAL RYEGRASS, TALL FESCUE AND ANNUAL RYEGRASS (⅓ EACH) SPREAD AT A RATE OF 3 POUNDS PER 1000 SQ. FT.

TEMPORARY SEEDING

MATERIAL	RATE PER ACRE	REQUIREMENTS	NOTES
ORGANIC MULCHES			
STRAW	1 – 2 TONS	DRY, UNCHOPPED, UNWEATHERED; AVOID WEEDS	SPREAD BY HAND OR MACHINE; MUST BE TACKED OR TIED DOWN
WOOD FIBER OF WOOD CELLULOSE	1/2 – 1 TON		USE W/ HYDROSEEDER; MAY BE USED TO TACK STRAW. DO NOT USE IN HOT, DRY WEATHER.
WOOD CHIPS	5 – 6 TONS	AIR DRY. ADD FERTILIZER N AT 12 lb / ton	APPLY WITH BLOWER, CHIP HANDLER, OR BY HAND. NOT FOR FINE TURF AREAS.
BARK	35 CY	AIR DRY, SHREDDED, OR HAMMERMILLED, OR CHIPS.	APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND. DON NOT USE ASPHALT TACK.
NETS AND MATS			
JUTE NET	COVER AREA	HEAVY, UNIFORM; WOVEN OF SINGLE JUTE YARN. USED WITH ORGANIC MULCH.	WITHSTANDS WATER FLOW.
EXCELSIOR (WOOD FIBER) MAT	COVER AREA		
FIBERGLASS ROVING	1/2 – 1 TON	CONTINUOUS FIBERS OF DRAWN GLASS BOUND TOGETHER WITH A NON-TOXIC AGENT	APPLY WITH COMPRESSED AIR EJECTOR. TACK W/ EMULSIFIED ASPHALT AT 25–35 gal/1000 sf

NOTES:
MULCHING IS A TEMPORARY EROSION CONTROL PRACTICE IN WHICH MATERIALS SUCH AS GRASS, HAY, WOOD CHIPS, WOOD FIBERS, STRAW, OR GRAVEL ARE PLACED ON EXPOSED OR RECENTLY PLANTED SOIL SURFACES. MULCHING IS HIGHLY RECOMMENDED AS A STABILIZATION METHOD AND IS MOST EFFECTIVE WHEN USED IN CONJUNCTION WITH VEGETATIVE ESTABLISHMENTS. MULCH MATTINGS ARE MATERIALS SUCH AS JUTE OR OTHER WOOD FIBERS THAT ARE FORMED INTO SHEETS AND ARE MORE STABLE THAN LOOSE MULCH. SEE TABLE BELOW FOR TYPICAL MULCHING MATERIALS AND APPLICATION RATES.

MAINTENANCE:
MULCHES MUST BE ANCHORED TO RESIST WIND DISPLACEMENT. NETTINGS SHOULD BE REMOVED WHEN PROTECTION IS NO LONGER NEEDED AND DISPOSED OF IN A LANDFILL OR COMPOSTED. MULCHED AREAS SHOULD BE INSPECTED FREQUENTLY TO IDENTIFY AREAS WHERE MULCH HAS LOOSENED OR BEEN REMOVED, ESPECIALLY AFTER RAINSTORMS. SUCH AREAS SHOULD BE RESEEDED (IF NECESSARY) AND THE MULCH COVER REPLACED IMMEDIATELY. MULCH BINDERS SHOULD BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURER. IF WASHOUT, BREAKAGE, OR EROSION OCCURS, SURFACES SHOULD BE REPAIRED, RESEEDED, AND REMULCHED, AND NEW NETTING SHOULD BE INSTALLED. INSPECTIONS SHOULD BE CONTINUED UNTIL VEGETATION IS FIRMLY ESTABLISHED.

MULCHING

NOTES:

1) SILT FENCE SHALL BE CONSTRUCTED BEFORE UPSLOPE LAND DISTURBANCE BEGINS.

2) ALL SILT FENCE SHALL BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE SO THAT WATER WILL NOT CONCENTRATE AT LOW POINTS IN THE FENCE AND SO THAT SMALL SWALES OR DEPRESSIONS WHICH MAY CARRY SMALL CONCENTRATED FLOWS TO THE SILT FENCE ARE DISSIPATED ALONG ITS LENGTH.

3) TO PREVENT WATER PONDED BY THE SILT FENCE FROM FLOWING AROUND THE ENDS, EACH END SHALL BE CONSTRUCTED UPSLOPE SO THAT THE ENDS ARE AT A HIGHER ELEVATION.

4) WHERE POSSIBLE, SILT FENCE SHALL BE PLACED ON THE FLATTEST AREA AVAILABLE.

5) WHERE POSSIBLE, VEGETATION SHALL BE PRESERVED FOR 5 FT. (OR AS MUCH AS POSSIBLE) UPSLOPE FROM THE SILT FENCE. IF VEGETATION IS REMOVED, IT SHALL BE REESTABLISHED WITHIN 7 DAYS FROM THE INSTALLATION OF THE SILT FENCE.

6) THE HEIGHT OF THE SILT FENCE SHALL BE A MINIMUM OF 16 IN. ABOVE THE ORIGINAL GROUND SURFACE.

7) 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.

8) POSTS SHALL BE A MINIMUM OF 5 FEET LONG, 2 INCHES IN DIAMETER AND SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND. WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET.

9) THE SILT FENCE SHALL BE PLACED IN A TRENCH CUT A MINIMUM OF 6 INCHES DEEP. THE TRENCH SHALL BE CUT WITH A TRENCHER, CABLE LAYING MACHINE, OR OTHER SUITABLE DEVICE WHICH WILL ENSURE AN ADEQUATELY UNIFORM TRENCH DEPTH.

10) THE SILT FENCE SHALL BE PLACED WITH THE STAKES ON THE DOWNSLOPE SIDE OF THE GEOTEXTILE AND SO THAT 8 IN. OF CLOTH ARE BELOW THE GROUND SURFACE. EXCESS MATERIAL SHALL LAY ON THE BOTTOM OF THE 6 IN. DEEP TRENCH. THE TRENCH SHALL BE BACKFILLED AND COMPACTED.

11) 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.

12) 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.

13) SEAMS BETWEEN SECTION OF SILT FENCE SHALL BE OVERLAPPED WITH THE END STAKES OF EACH SECTION WRAPPED TOGETHER BEFORE DRIVING INTO THE GROUND.

14) SILT FENCE SHALL ALLOW RUNOFF TO PASS ONLY AS DIFFUSE FLOW THROUGH THE GEOTEXTILE. IF RUNOFF OVERTOPS THE SILT FENCE, FLOWS UNDER OR AROUND THE ENDS, OR IN ANY OTHER WAY BECOMES A CONCENTRATED FLOW, ONE OF THE FOLLOWING SHALL BE PERFORMED, AS APPROPRIATE: A) THE LAYOUT OF THE SILT FENCE SHALL BE CHANGED, B) ACCUMULATED SEDIMENT SHALL BE REMOVED, OR C) OTHER PRACTICES SHALL BE INSTALLED.

MAINTENANCE:
SILT FENCE SHOULD BE INSPECTED REGULARLY AND FREQUENTLY AS WELL AS AFTER EACH RAINFALL EVENT TO INSURE THAT THEY ARE INTACT AND THERE ARE NO GAPS AT THE FENCE-GROUND INTERFACE OR TEARS ALONG THE LENGTH OF THE FENCE. IF GAPS OR TEARS ARE FOUND, THEY SHOULD BE REPAIRED OR THE FABRIC REPLACED IMMEDIATELY. ACCUMULATED SEDIMENTS SHOULD BE REMOVED FROM THE FENCE BASE WHEN THE SEDIMENT REACHES ONE-THIRD TO ONE-HALF THE HEIGHT OF THE FENCE. SEDIMENT REMOVAL SHOULD OCCUR MORE FREQUENTLY IF ACCUMULATED SEDIMENT IS CREATING NOTICEABLE STRAIN ON THE FABRIC AND THERE IS THE POSSIBILITY OF THE FENCE FAILING FROM A SUDDEN STORM EVENT. WHEN THE SILT FENCE IS REMOVED, THE ACCUMULATED SEDIMENT SHOULD BE REMOVED.

PERMANENT SEEDING			
SEED MIX	SEEDING RATE LB./AC.	SEEDING RATE LB./1,000 SQ FT	NOTES:
GENERAL USE			
CREEPING RED FESCUE	20–40	1/2 – 1	
DOMESTIC RYEGRASS	10–20	1/4 – 1/2	
KENTUCKY BLUEGRASS	10–20	1/4 – 1/2	
TALL FESCUE	40	1	
DWARF FESCUE	40	1	
STEEP BANKS OR CUT SLOPES			
TALL FESCUE	40	1	
CROWN VETCH	10	1/4	DO NOT SEED LATER THAN AUGUST
TALL FESCUE	20	1/2	
FLAT PEA	20	1/2	DO NOT SEED LATER THAN AUGUST
TALL FESCUE	20	1/2	
ROAD DITCHES AND SWALES			
TALL FESCUE	40	1	
DWARF FESCUE	90	2 1/4	
KENTUCKY BLUEGRASS	5		
LAWNS			
KENTUCKY BLUEGRASS	60	1 1/2	
PERENNIAL RYEGRASS	60	1 1/2	
KENTUCKY BLUEGRASS	60	1 1/2	FOR SHADED AREAS
CREEPING RED FESCUE	60	1 1/2	

NOTE: OTHER APPROVED SEED SPECIES MAY BE SUBSTITUTED

NOTES:
PERMANENT SEEDING IS USED TO CONTROL RUNOFF AND EROSION ON DISTURBED AREAS BY ESTABLISHING PERENNIAL VEGETATIVE COVER FROM SEED.THIS PRACTICE IS ECONOMICAL, ADAPTABLE TO DIFFERENT SITE CONDITIONS, AND ALLOWS SELECTION OF THE MOST APPROPRIATE PLANT MATERIALS. AREAS TO BE STABILIZED WITH PERMANENT VEGETATION MUST BE SEEDED OR PLANTED 1 TO 4 MONTHS AFTER THE FINAL GRADE IS ACHIEVED UNLESS TEMPORARY STABILIZATION MEASURES ARE IN PLACE. SUCCESSFUL PLANT ESTABLISHMENT CAN BE MAXIMIZED WITH PROPER PLANNING, CONSIDERATION OF SOIL CHARACTERISTICS, SELECTION OF PLANT MATERIALS THAT ARE SUITABLE FOR THE SITE; ADEQUATE SEEDBED PREPARATION, LIMING, AND FERTILIZATION; TIMELY PLANTING; AND REGULAR MAINTENANCE.

MAINTENANCE:
GRASSES SHOULD EMERGE WITHIN 4–28 DAY AND LEGUMES 5–28 DAYS AFTER SEEDING, WITH LEGUMES FOLLOWING GRASSES. A SUCCESSFUL STAND SHOULD EXHIBIT THE FOLLOWING:

VIGOROUS DARK GREEN OR BLUISH GREEN SEEDLINGS, NOT YELLOW
UNIFORM DENSITY, WITH NURSE PLANTS, LEGUMES, AND GRASSES WELL INTERMIXED
GREEN LEAVES – PERENNIALS SHOULD REMAIN GREEN THROUGHOUT THE SUMMER, AT LEAST AT THE PLANT BASES.

SEEDED AREAS SHOULD BE INSPECTED FOR FAILURE, AND NECESSARY REPAIRS AND RESEEDING SHOULD BE MADE AS SOON AS POSSIBLE. IF A STAND HAS INADEQUATE COVER, THE CHOICE OF PLANT MATERIALS AND QUANTITIES OF LIME AND FERTILIZER SHOULD BE REEVALUATED. DEPENDING ON THE CONDITION OF THE STAND, AREAS CAN BE REPAIRED BY OVERSEEDING OR RESEEDING AFTER COMPLETE SEEDBED PREPARATION. IF TIMING IS BAD, RYE GRAIN OR GERMAN MILLET CAN BE OVERSEEDED TO THICKEN THE STAND UNTIL A SUITABLE TIME FOR SEEDING PERENNIALS. CONSIDER SEEDING TEMPORARY, ANNUAL SPECIES IF THE SEASON IS NOT APPROPRIATE FOR PERMANENT SEEDING. IF VEGETATION FAILS TO GROW, SOIL SHOULD BE TESTED TO DETERMINE IF LOW pH OR NUTRIENT IMBALANCES ARE RESPONSIBLE. ON A TYPICAL DISTURBED SITE, FULL PLANT ESTABLISHMENT USUALLY REQUIRES REFERTILIZATION IN THE SECOND GROWING SEASON. SOIL TESTS CAN BE USED TO DETERMINE IF MORE FERTILIZER NEEDS TO BE ADDED. DO NOT FERTILIZE COOL SEASON GRASSES IN LATE MAY THROUGH JULY. GRASS THAT LOOKS YELLOW MAY BE NITROGEN DEFICIENT. DO NOT USE NITROGEN FERTILIZER IF THE STAND CONTAINS MORE THAT 20 PERCENT LEGUMES.

PERMANENT SEEDING

NOTES:
CONSTRUCTION SEQUENCING AND DISTURBING ONLY SMALL AREAS AT A TIME CAN GREATLY REDUCE PROBLEMATIC DUST FROM THE SITE. IF LAND MUST BE DISTURBED, ADDITIONAL TEMPORARY STABILIZATION MEASURES SHOULD BE CONSIDERED PRIOR TO DISTURBANCES.

1) SPRINKLING THE GROUND SURFACE WITH WATER UNTIL IT IS MOIST IS AN EFFECTIVE DUST CONTROL MEASURE FOR HAUL ROADS AND OTHER TRAFFIC ROUTES.

2) IN AREAS NOT EXPECTED TO HANDLE VEHICULAR TRAFFIC, VEGETATIVE STABILIZATION OF THE SOIL IS OFTEN DESIRABLE. THIS CAN BE ACHIEVED THROUGH TEMPORARY OR PERMANENT SEEDING OR SODDING AS LOCAL CONDITIONS WARRANT.

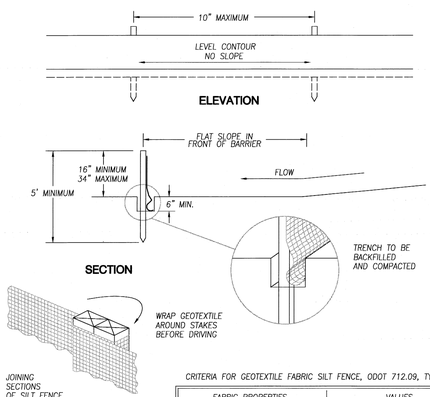
3) MULCHING CAN BE A QUICK AND EFFECTIVE MEANS OF DUST CONTROL FOR A RECENTLY DISTURBED AREA.

4) WIND BREAKS CAN BE EITHER NATURAL OR CONSTRUCTED THAT WILL REDUCE WIND VELOCITY THROUGH THE SITE. THEY CAN BE TREES OR SHRUBS LEFT IN PLACE DURING SITE CLEARING, OR CONSTRUCTED BARRIERS SUCH AS WIND FENCE, SNOW FENCE, TARP CURTAIN, HAY BALE, CRATE WALL OR SEDIMENT WALL.

5) STONE MAY BE AN EFFECTIVE DUST DETERRENT FOR CONSTRUCTION ROADS AND ENTRANCES OR AS A MULCH IN AREAS WHERE VEGETATION CANNOT BE ESTABLISHED.

MAINTENANCE:
DUST CONTROL MEASURES INVOLVING WATER REQUIRE MORE MONITORING THAN STRUCTURAL OR VEGETATIVE CONTROLS TO REMAIN EFFECTIVE. IF STRUCTURAL CONTROLS ARE USED, THEY SHOULD BE INSPECTED FOR DETERIORATION ON A REGULAR BASIS TO ENSURE THAT THEY ARE STILL ACHEVING THEIR INTENDED PURPOSE.

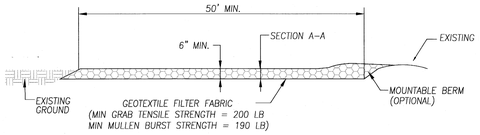
DUST CONTROL



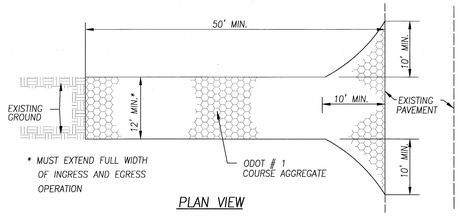
CRITERIA FOR GEOTEXTILE FABRIC SILT FENCE, ODOT 712.09, TYPE C

FABRIC PROPERTIES	VALUES
MINIMUM TENSILE STRENGTH	120 LB. MINIMUM
MINIMUM BURST STRENGTH	200 PSI MINIMUM
SLURRY FLOW RATE	0.3 GAL./MIN./FT2 MAXIMUM
APPARENT OPENING SIZE	AOS ≤ 0.84 mm
ULTRAVIOLET RADIATION STABILITY	90% MINIMUM

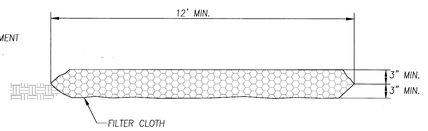
SILT FENCE



SIDE ELEVATION



PLAN VIEW



SECTION A–A

NOTES:

1) MAINTENANCE AS REQUIRED AND DIRECTED BY THE ENGINEERING DEPARTMENT

2) CONSTRUCTION ENTRANCES SHALL NOT BE RELIED UPON TO REMOVE MUD FROM VEHICLES AND PREVENT OFF-SITE TRACKING. VEHICLES THAT ENTER AND LEAVE THE CONSTRUCTION SITE SHALL BE RESTRICTED FROM MUDDY PLACES.

MAINTENANCE:
A TOP DRESSING OF ADDITIONAL STONE SHALL BE APPLIED AS CONDITIONS DEMAND. MUD SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADS, OR ANY OTHER SURFACE WHERE RUNOFF IS NOT CHECKED BY SEDIMENT CONTROLS, SHALL BE REMOVED IMMEDIATELY. REMOVAL SHALL BE ACCOMPLISHED BY SCRAPING OR SWEEPING.

STONE CONSTRUCTION ENTRANCE

NOTES:

1) INLET PROTECTION SHALL BE CONSTRUCTED EITHER BEFORE UPSLOPE LAND DISTURBANCE BEGINS OR BEFORE THE STORM DRAIN BECOMES OPERATIONAL.

2) SILT FENCE SHALL BE GEOTEXTILE FABRIC, ODOT 712.09, TYPE C, AND SHOULD BE CUT FROM A CONTINUOUS ROLL TO AVOID JOINTS.

3) STAKES SHALL BE 1" x 2" WOOD (PREFERRED) OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET. STAKES SHALL BE SPACED AROUND THE PERIMETER OF THE INLET A MAXIMUM OF 3 FEET APART AND SECURELY DRIVEN INTO THE GROUND (MINIMUM OF 8 INCHES). THE TOP OF THE FRAME SHALL BE AT LEAST 6 IN. BELOW ADJACENT ROADS IF PONDED WATER WOULD 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 THE FRAME.

5) THE SILT FENCE SHALL BE STAPLED WITH HEAVY DUTY WIRE STAPLES AT LEAST 1/2 INCH LONG, TO THE WOODEN STAKES, AND 8 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE HEIGHT OF THE FILTER BARRIER SHALL BE A MINIMUM OF 15 INCHES AND SHALL NOT EXCEED 18 INCHES (PLATE 1.08B)

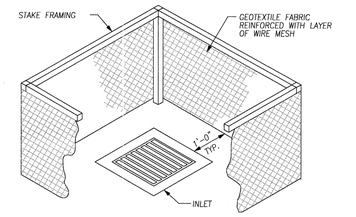
6) THE GEOTEXTILE SHALL OVERLAP ACROSS ONE SIDE OF THE INLET SO THE ENDS OF THE CLOTH ARE NOT FASTENED TO THE SAME POST.

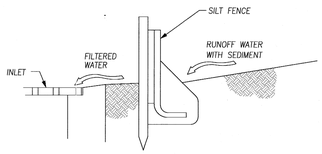
7) A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP AROUND THE OUTSIDE PERIMETER OF THE STAKES.

8) BACKFILL SHALL BE PLACED AROUND THE INLET IN COMPACTED 6 IN. LAYERS UNTIL THE EARTH IS EVEN WITH NOTCH ELEVATION ON ENDS AND TOP ELEVATION ON SIDES.

9) A COMPACTED EARTH DIKE OR A CHECK DAM SHALL BE CONSTRUCTED IN THE DITCH LINE BELOW THE INLET IF THE INLET IS NOT IN A DEPRESSION AND IF RUNOFF BYPASSING THE INLET WILL NOT FLOW TO A SETTLING POND. THE TOP OF EARTH DIKES SHALL BE AT LEAST 6 IN. HIGHER THAN THE TOP OF THE FRAME.

MAINTENANCE:
SILT FENCE SHOULD BE INSPECTED REGULARLY AND FREQUENTLY AS WELL AS AFTER EACH RAINFALL EVENT TO INSURE THAT THEY ARE INTACT AND THERE ARE NO GAPS AT THE FENCE-GROUND INTERFACE OR TEARS ALONG THE LENGTH OF THE FENCE. IF GAPS OR TEARS ARE FOUND, THEY SHOULD BE REPAIRED OR THE FABRIC REPLACED IMMEDIATELY. ACCUMULATED SEDIMENTS SHOULD BE REMOVED FROM THE FENCE BASE WHEN THE SEDIMENT REACHES ONE-THIRD TO ONE-HALF THE HEIGHT OF THE FENCE. SEDIMENT REMOVAL SHOULD OCCUR MORE FREQUENTLY IF ACCUMULATED SEDIMENT IS CREATING NOTICEABLE STRAIN ON THE FABRIC AND THERE IS THE POSSIBILITY OF THE FENCE FAILING FROM A SUDDEN STORM EVENT. WHEN THE SILT FENCE IS REMOVED, THE ACCUMULATED SEDIMENT SHOULD BE REMOVED.



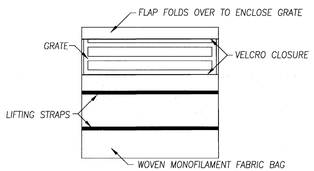


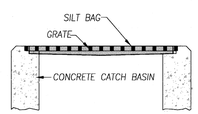
SECTION

YARD INLET PROTECTION

SITE INSPECTIONS SHALL BE DONE WEEKLY AND AFTER EVERY RAINFALL EVENT EXCEEDING 1/2" OF RAINFALL. ALL NECESSARY REPAIRS SHOULD BE IMPLEMENTED IMMEDIATELY AFTER SUCH INSPECTIONS.

CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING WEEKLY EROSION CONTROL INSPECTION REPORTS. SUCH REPORTS SHALL BE MADE AVAILABLE TO OWNER, ENGINEER AND CITY / STATE OFFICIALS UPON THEIR REQUEST.





INSTALLATION:
1. STAND THE GRATE ON END.
2. PLACE THE SILT BAG OVER THE GRATE.
3. ROLL THE GRATE OVER SO THAT THE OPEN END IS UP.
4. PULL UP THE BAG.
5. TUCK THE FLAP IN.
6. PRESS THE VELCRO STRAPS TOGETHER.
7. BE SURE THAT THE END OF THE GRATE IS COMPLETELY COVERED BY THE FLAP OR THE SILT BAG WILL NOT WORK PROPERLY.
8. HOLDING THE HANDLES, CAREFULLY PLACE THE SILT BAG WITH THE GRATE INSERTED INTO THE CATCH BASIN FRAME.

MAINTENANCE:
TO INSURE PROPER OPERATION REMOVE SILT, SEDIMENT, AND DEBRIS FROM THE SURFACE AND THE VICINITY OF THE UNIT WITH A SQUARE POINT SHOVEL OR STIFF BRISTLE BROOM AWAY FROM ENVIRONMENTALLY SENSITIVE AREAS AND WATERWAYS IN MANNER SATISFACTORY TO THE ENGINEER/INSPECTOR. REMOVE FINE MATERIAL FROM INSIDE SILT BAG AS NEEDED. DISPOSE OF SILT BAG NO LONGER IN USE AT AN APPROPRIATE RECYCLING OR SOLID WASTE FACILITY.

INLET INSPECTION:
TO INSPECT INLET, REMOVE SILT BAG WITH GRATE INSIDE, INSPECT CATCH BASIN AND REPLACE SILT BAG BACK INTO GRATE FRAME.

NOTE:
PONDING IS LIKELY IF SEDIMENT IS NOT REMOVED REGULARLY. THE SILT BAG MUST NEVER BE USED WHERE OVERFLOW MAY ENDANGER AN EXPOSED SLOPE.

SILT BAG INLET PROTECTION

STATE OF OHIO ★ ENGINEER ★ MATTHEW NEFF E-49050 REGISTERED ★ PROFESSIONAL

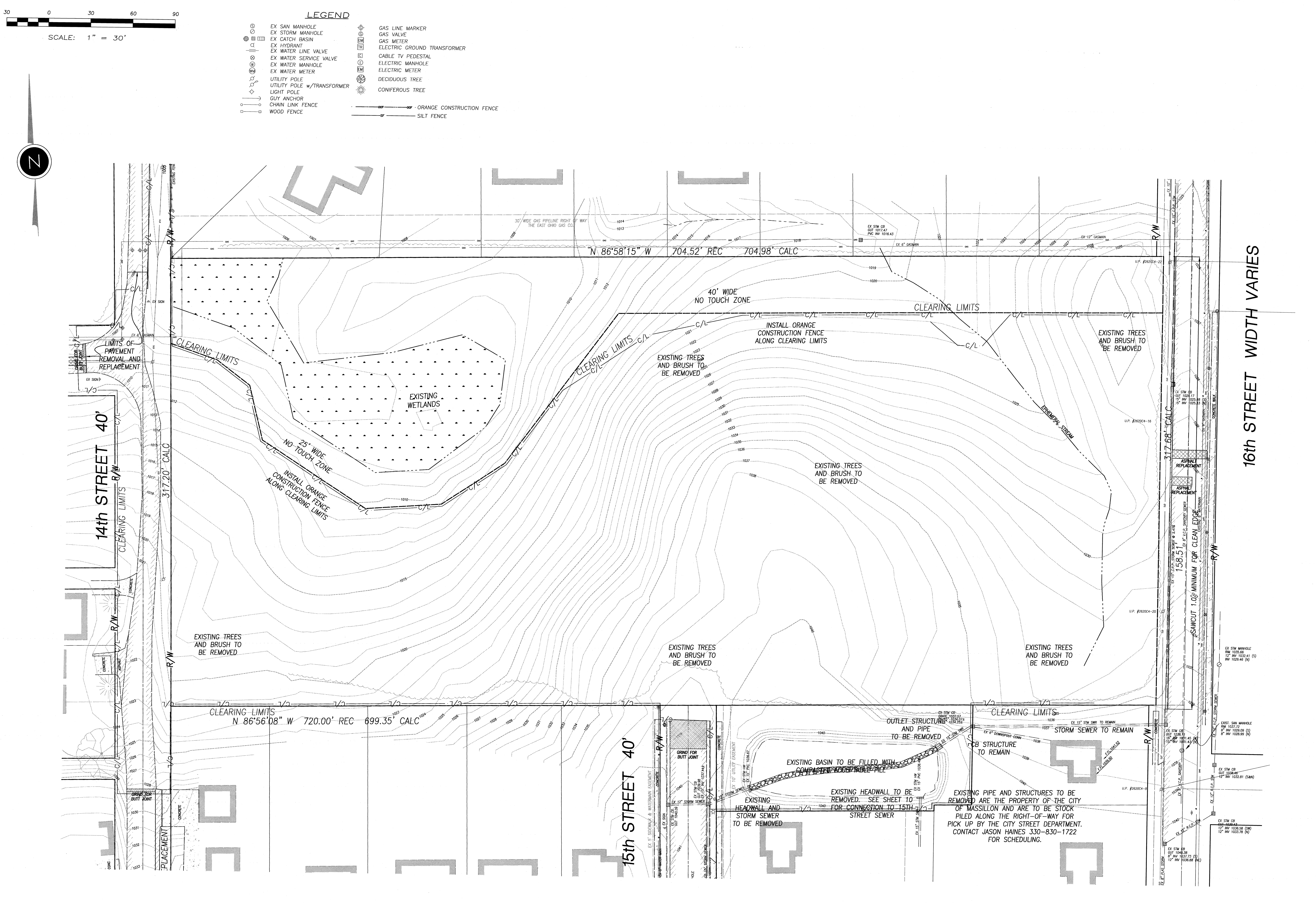
IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
STORMWATER POLLUTION PREVENTION PLAN DETAILS

Revisions Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFF design group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
toll: 216.663.8820 • fax: 216.663.8821

Horizontal Scale: NONE	Vertical Scale: -
Original Submission: Feb 06, 2007	Last Plot Date: Apr 27, 2007
Drawn By: -	Checked By
Project Number: 7323	Field Crew: -
Sheet: 7 of 20	

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Apr 27, 2007 - 11:50am



Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Apr 30, 2007 - 12:20pm

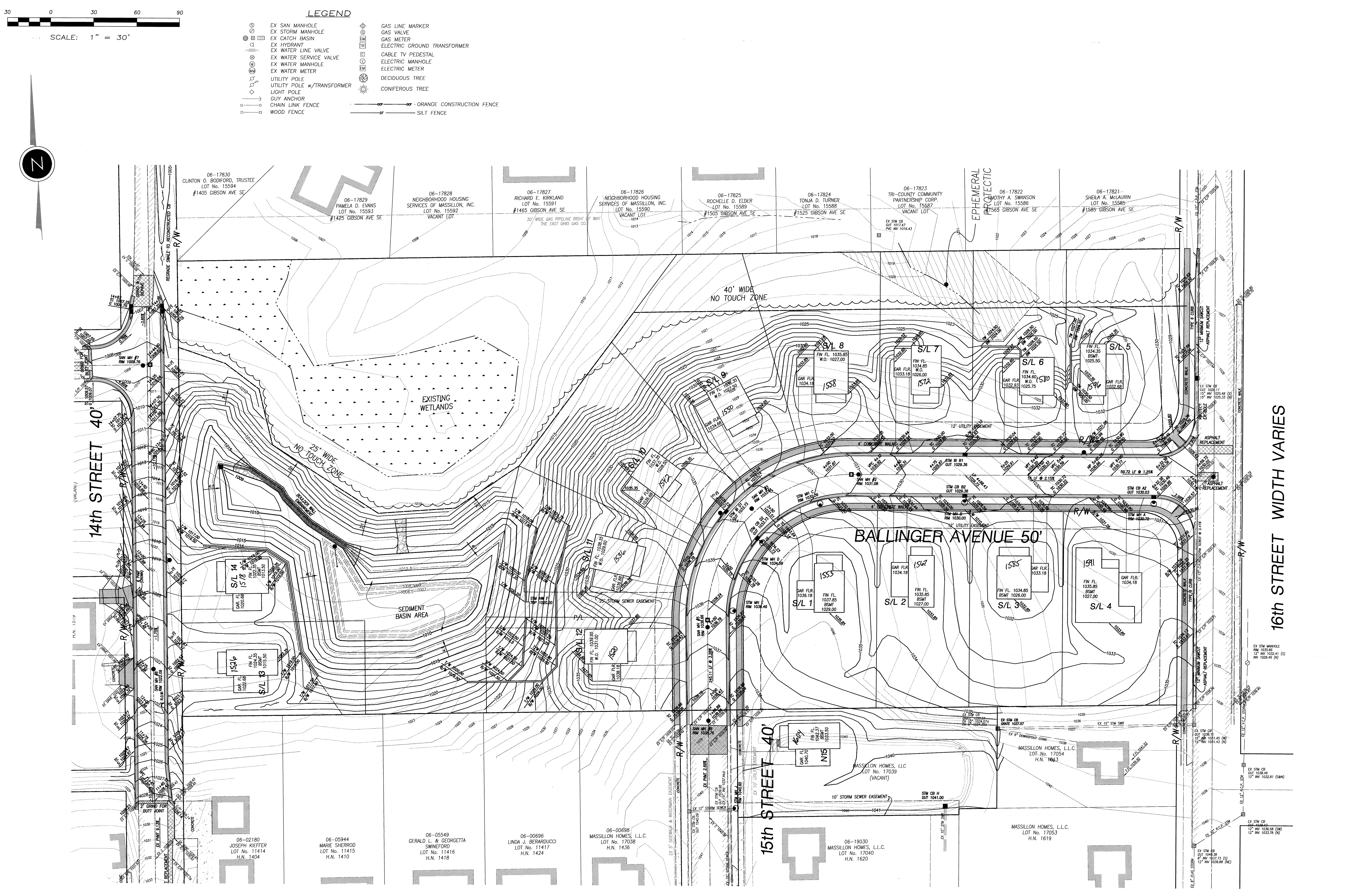
STATE OF OHIO ★ MATTHEW C. NEFF E-49050 REGISTERED PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
TOPOGRAPHIC SURVEY & DEMOLTION PLAN

Revisions		
Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesigngroup
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale	Vertical Scale
1" = 30'	-
Original Submission	Last Plot Date
Feb 06, 2007	Apr 30, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH



Drawing File: J:\7300-7399\7323 massillon – subd site\7323.dwg May 01, 2007 – 12:51pm

STATE OF OHIO ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:

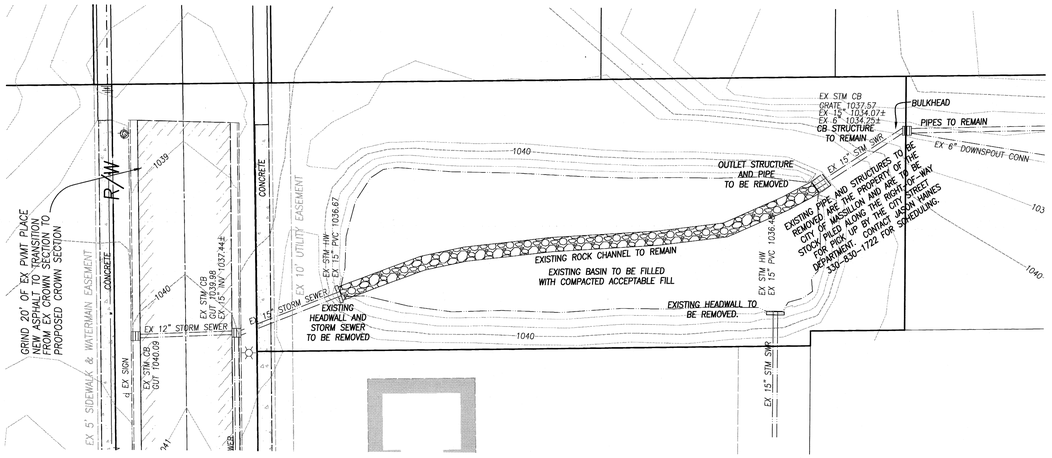
BALLINGER ESTATES PHASE II

GRADING PLAN

Revisions		
Number	Date	Description

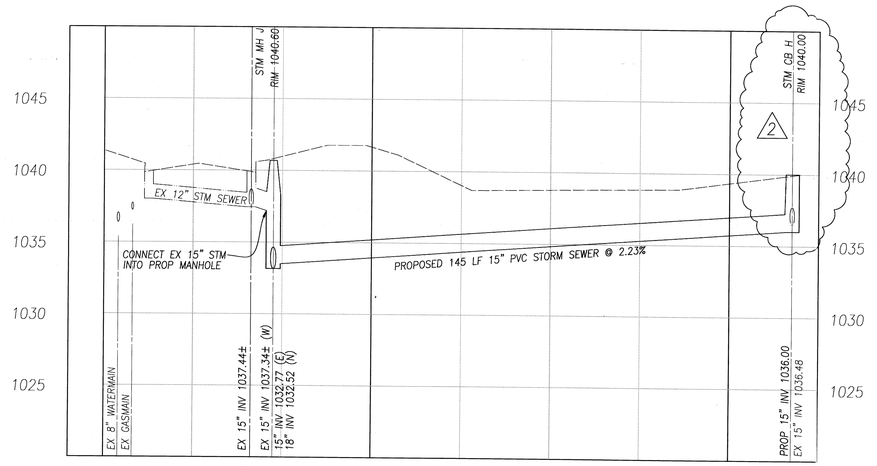
PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale	Vertical Scale
1" = 30'	-
Original Submission Feb 06, 2007	Last Plot Date May 01, 2007
Drawn By DLN	Checked By
Project Number 7323	Field Crew FS & BH



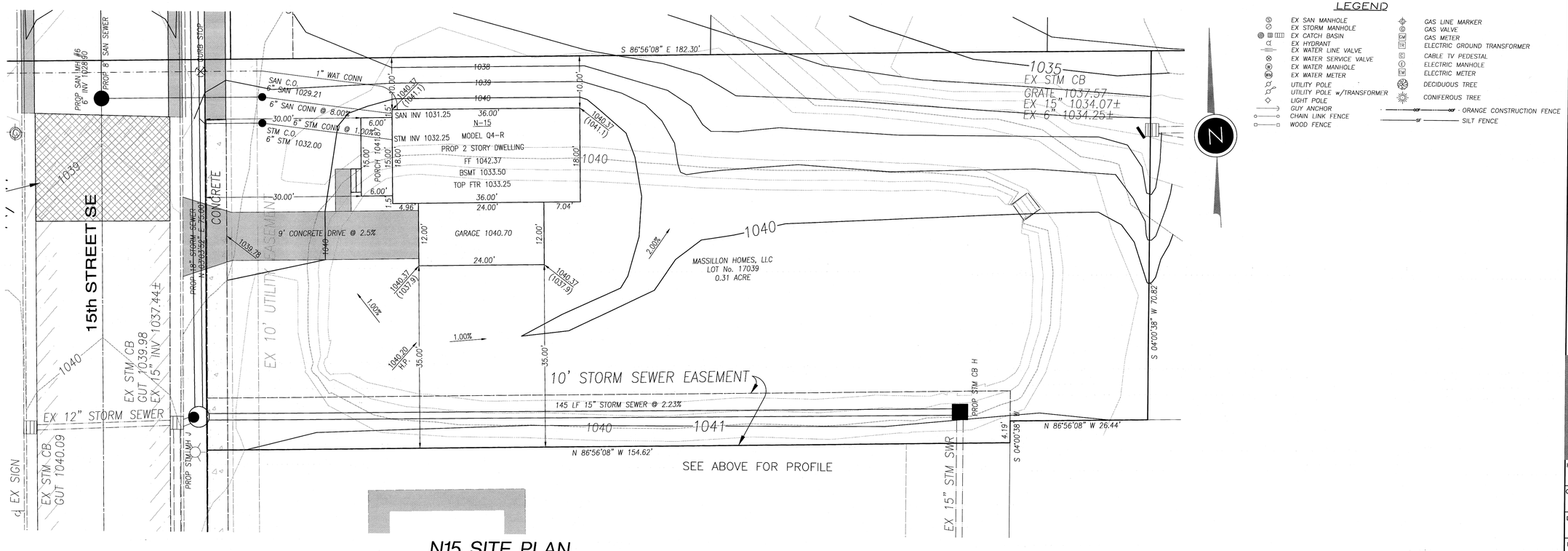
N15 DEMOLITION PLAN

SCALE: 1" = 20'



N15 STORM SEWER PROFILE

SCALE: 1" = 20'



N15 SITE PLAN

SCALE: 1" = 10'

LEGEND

- EX SAN MANHOLE
- EX STORM MANHOLE
- EX CATCH BASIN
- EX HYDRANT
- EX WATER LINE VALVE
- EX WATER SERVICE VALVE
- EX WATER MANHOLE
- EX WATER METER
- UTILITY POLE
- UTILITY POLE w/TRANSFORMER
- LIGHT POLE
- GUY ANCHOR
- CHAIN LINK FENCE
- WOOD FENCE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- ELECTRIC GROUND TRANSFORMER
- CABLE TV PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- DECIDUOUS TREE
- CONIFEROUS TREE
- ORANGE CONSTRUCTION FENCE
- SILT FENCE

STATE OF OHIO · PROFESSIONAL ENGINEER · MATTHEW C. NEFF E-49050 · REGISTERED

IMPROVEMENT PLANS FOR:

BALLINGER ESTATES PHASE II

N15 PLAN

Revisions		
Number	Date	Description
2	05/22/07	REVISIONS PER CITY

PLANNERS | ENGINEERS | SURVEYORS

mNEFFdesign group

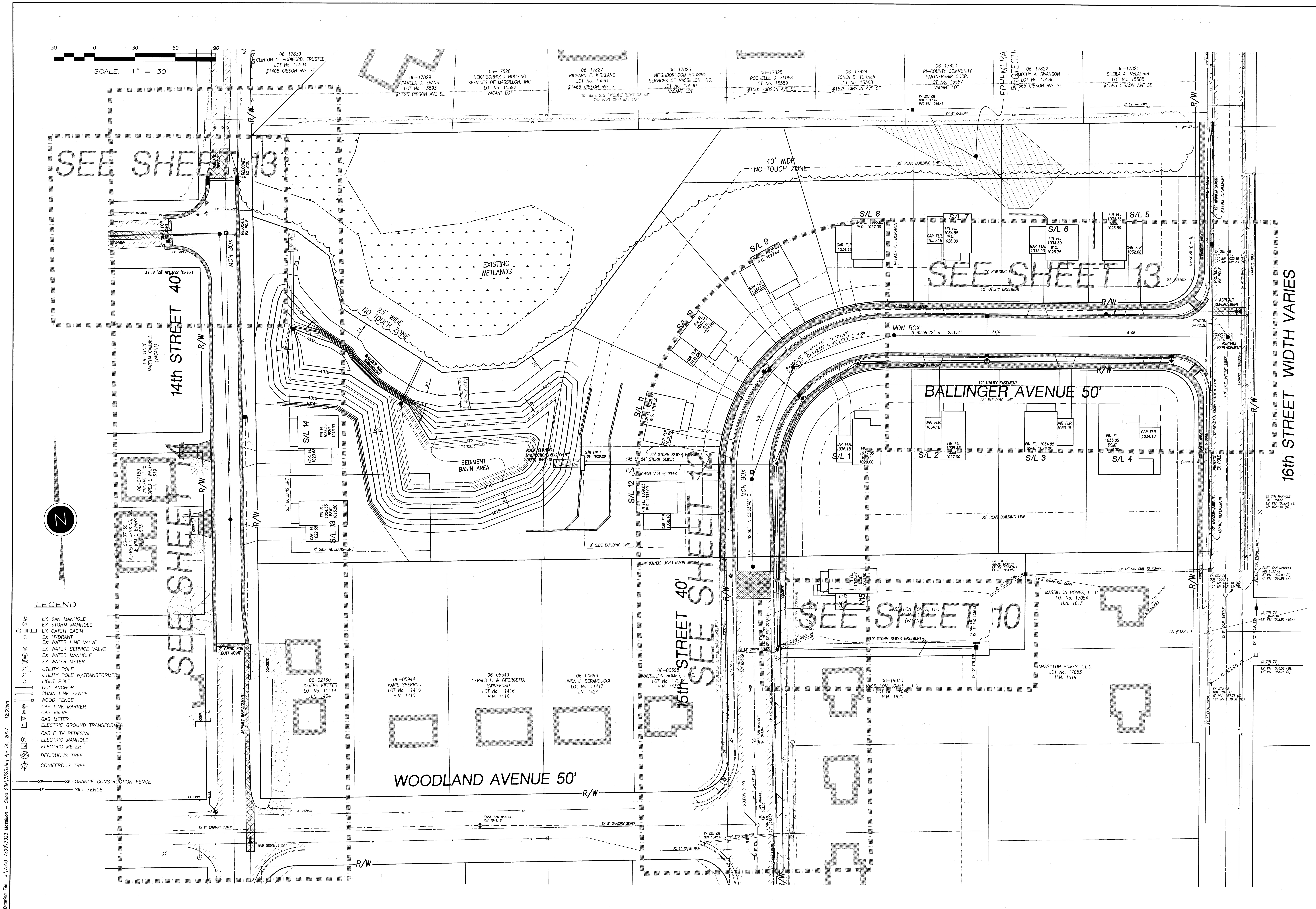
DESIGNING LAND FOR YOUR WORLD

5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale	Vertical Scale
AS SHOWN	-
Original Submission	Last Plot Date
Feb 06, 2007	May 23, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 10 of 20

Drawing File: d:\7300-7399\7323 Massillon - Subd Site\7323.dwg May 23, 2007 - 5:07pm



STATE OF OHIO ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:

BALLINGER ESTATES PHASE II

OVERALL PAVEMENT & UTILITY PLAN

Revisions		
Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS

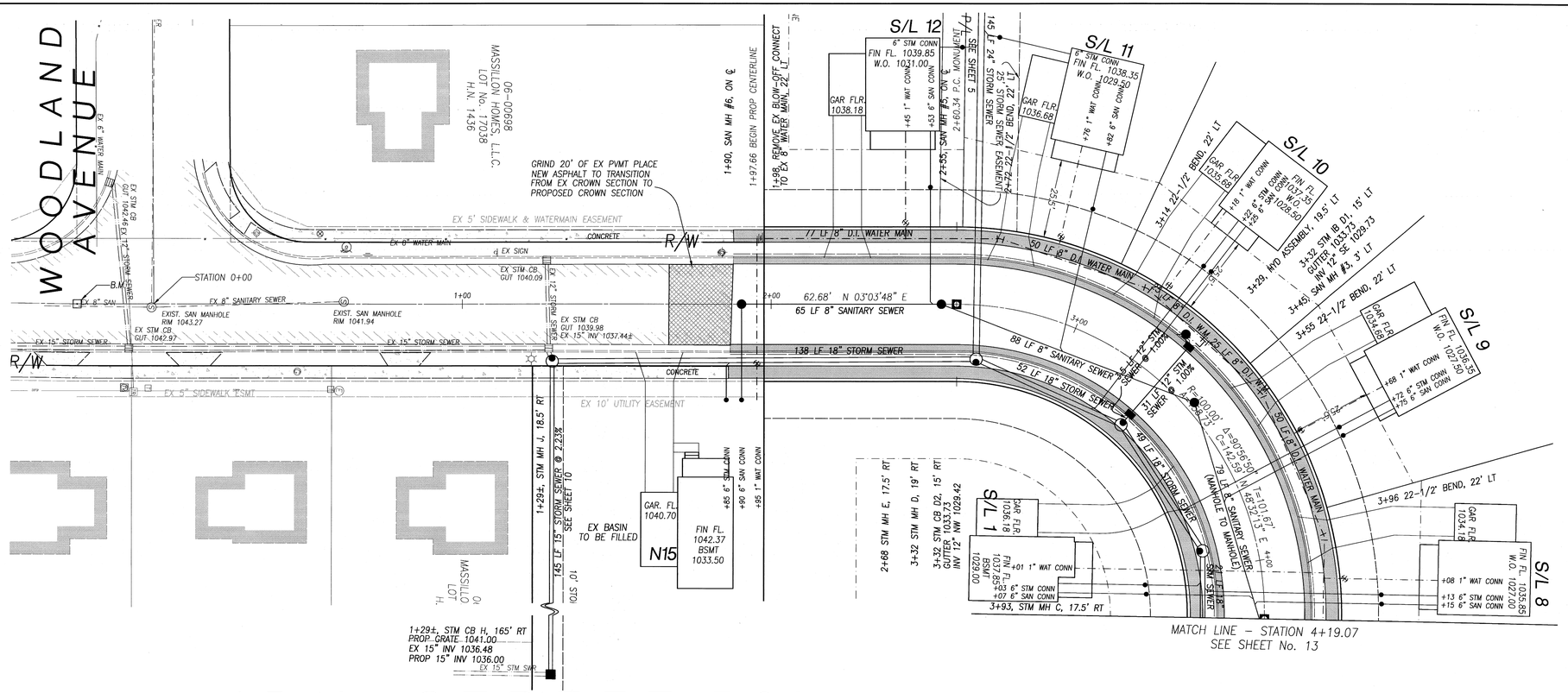
mNEFFdesigngroup

DESIGNING LAND FOR YOUR WORLD

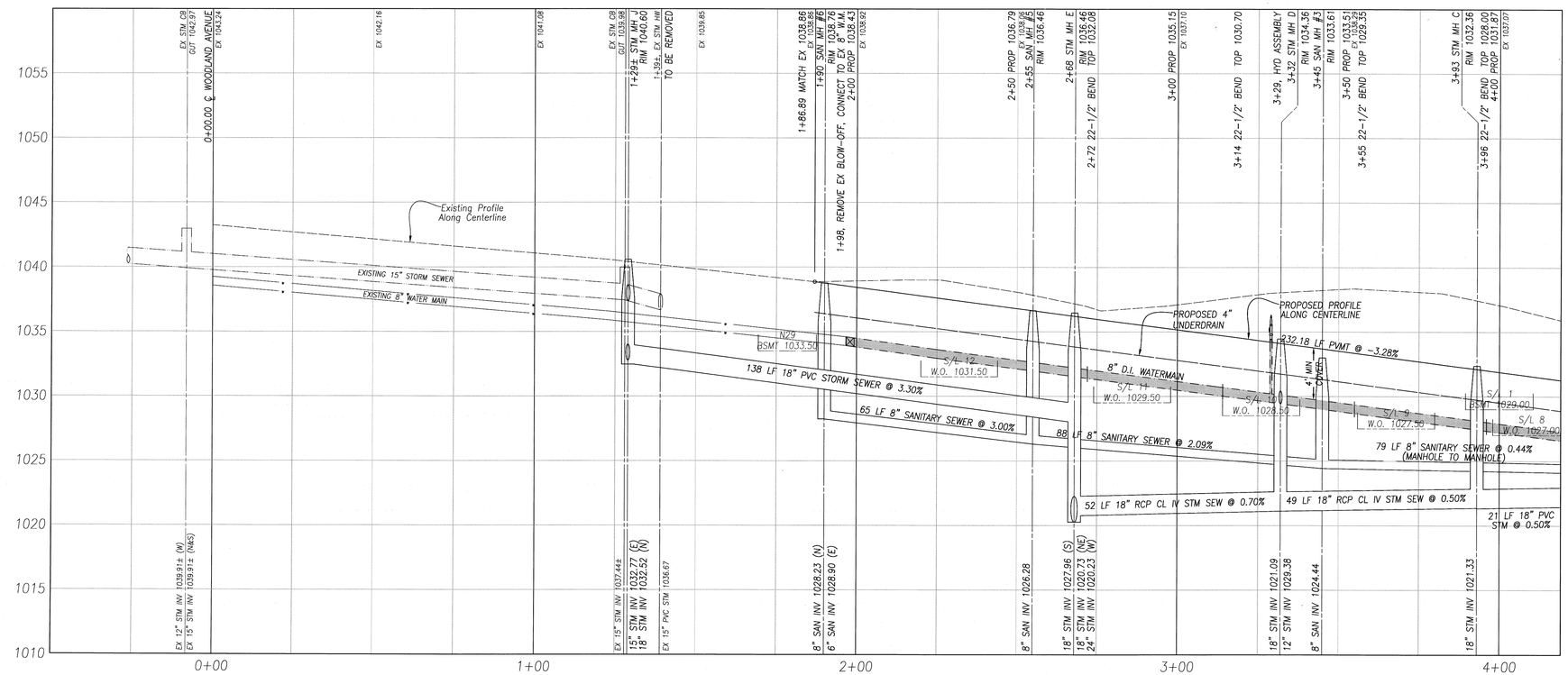
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

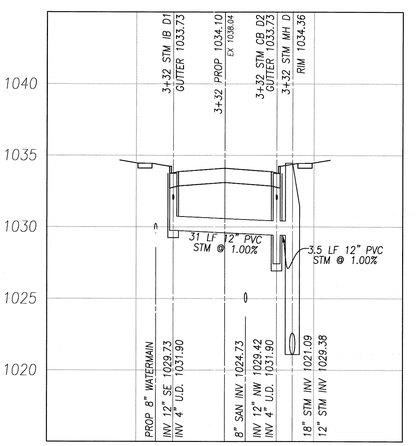
Horizontal Scale	Vertical Scale
1" = 30'	-
Original Submission	Last Plot Date
Feb 06, 2007	Apr 30, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg Apr 30, 2007 - 12:09pm



15th STREET 50'





CATCH BASIN PROFILE
STATION 3+32

SCALE: 1" = 20'

LEGEND

- EX SAN MANHOLE
- EX STORM MANHOLE
- EX CATCH BASIN
- EX HYDRANT
- EX WATER LINE VALVE
- EX WATER SERVICE VALVE
- EX WATER MANHOLE
- EX WATER METER
- UTILITY POLE
- UTILITY POLE w/TRANSFORMER
- LIGHT POLE
- GUY ANCHOR
- CHAIN LINK FENCE
- WOOD FENCE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- ELECTRIC GROUND TRANSFORMER
- CABLE TV PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- DECIDUOUS TREE
- CONIFEROUS TREE
- ORANGE CONSTRUCTION FENCE
- SILT FENCE

NOTES:

1) BUILDING FOOTPRINTS AND BASEMENT OPTIONS ARE ILLUSTRATIVE ONLY AND DO NOT NECESSARILY REFLECT THE FINAL PLAN FOR EACH LOT AND DWELLING. THIS WILL BE DETERMINED AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

2) ALL ELEVATIONS SHOWN FOR HOUSES ON EACH LOT WILL BE VERIFIED AND ADJUSTED AS NECESSARY AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

3) STORM AND SANITARY CONNECTION INSTALLATION SHALL INCLUDE TEST TEE, PIPE THROUGH UTILITY EASEMENT AND ANY CLEANOUTS WHERE INDICATED. WATER CONNECTION INSTALLATION SHALL INCLUDE CURB SHUT-OFFS.

4) ALL PROPOSED WATERMAIN IS TO BE DUCTILE IRON, CLASS 52 WITH POLYWRAP.

STATE OF OHIO · MATTHEW C. NEFF · E-49050 · REGISTERED · PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
PLAN AND PROFILE
15th STREET

Revisions		
Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale 1" = 20'	Vertical Scale 1" = 5'
Original Submission Feb 06, 2007	Last Plot Date May 02, 2007
Drawn By DLN	Checked By
Project Number 7323	Field Crew FS & BH

Sheet 12 of 20

Drawing File: J:\7300-7399\7323 Massillon - Subd Shts\7323.dwg May 02, 2007 - 11:54am

SCALE: 1" = 20'

LEGEND

- EX SAN MANHOLE
- EX STORM MANHOLE
- EX CATCH BASIN
- EX HYDRANT
- EX WATER LINE VALVE
- EX WATER SERVICE VALVE
- EX WATER MANHOLE
- EX WATER METER
- UTILITY POLE
- UTILITY POLE w/TRANSFORMER
- LIGHT POLE
- GUY ANCHOR
- CHAIN LINK FENCE
- WOOD FENCE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- ELECTRIC GROUND TRANSFORMER
- CABLE TV PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- DECIDUOUS TREE
- CONIFEROUS TREE
- ORANGE CONSTRUCTION FENCE
- SILT FENCE

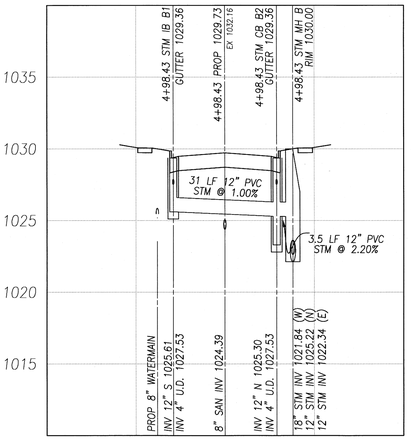
NOTES:

1) BUILDING FOOTPRINTS AND BASEMENT OPTIONS ARE ILLUSTRATIVE ONLY AND DO NOT NECESSARILY REFLECT THE FINAL PLAN FOR EACH LOT AND DWELLING. THIS WILL BE DETERMINED AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

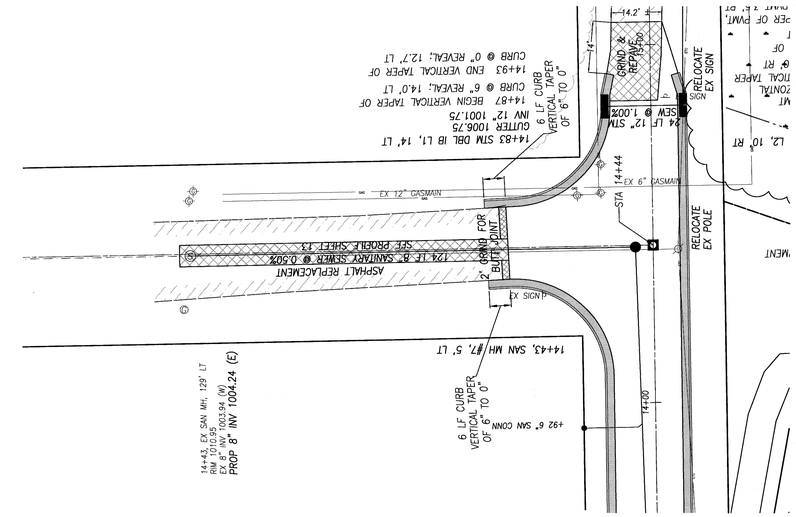
2) ALL ELEVATIONS SHOWN FOR HOUSES ON EACH LOT WILL BE VERIFIED AND ADJUSTED AS NECESSARY AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

3) STORM AND SANITARY CONNECTION INSTALLATION SHALL INCLUDE TEST TEE, PIPE THROUGH UTILITY EASEMENT AND ANY CLEANOUTS WHERE INDICATED. WATER CONNECTION INSTALLATION SHALL INCLUDE CURB SHUT-OFFS.

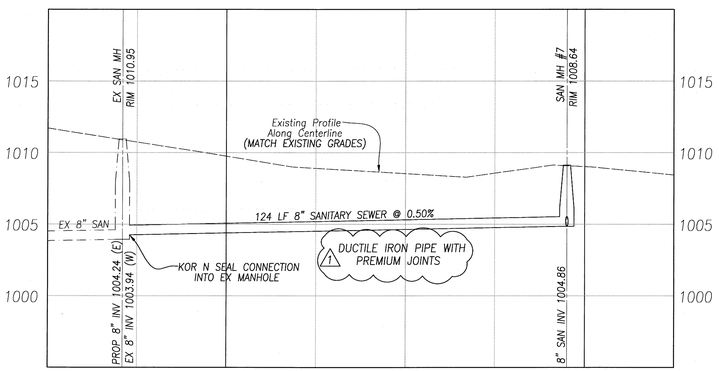
4) ALL PROPOSED WATERMAIN IS TO BE DUCTILE IRON, CLASS 52 WITH POLYWRAP.

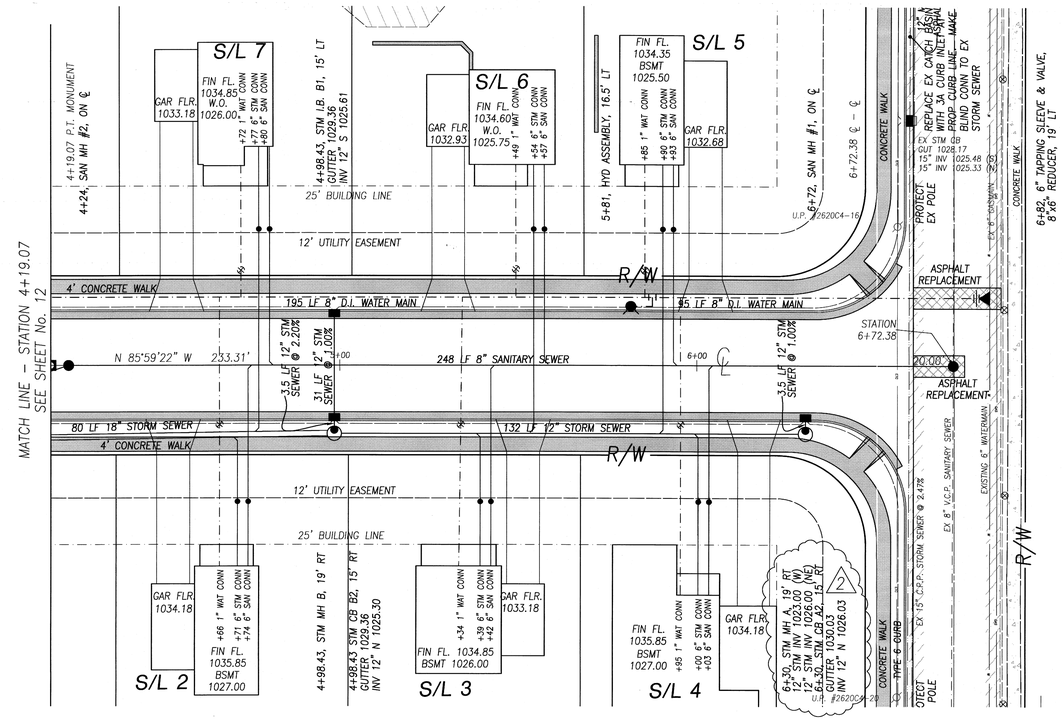


CATCH BASIN PROFILE
STATION 4+98.43

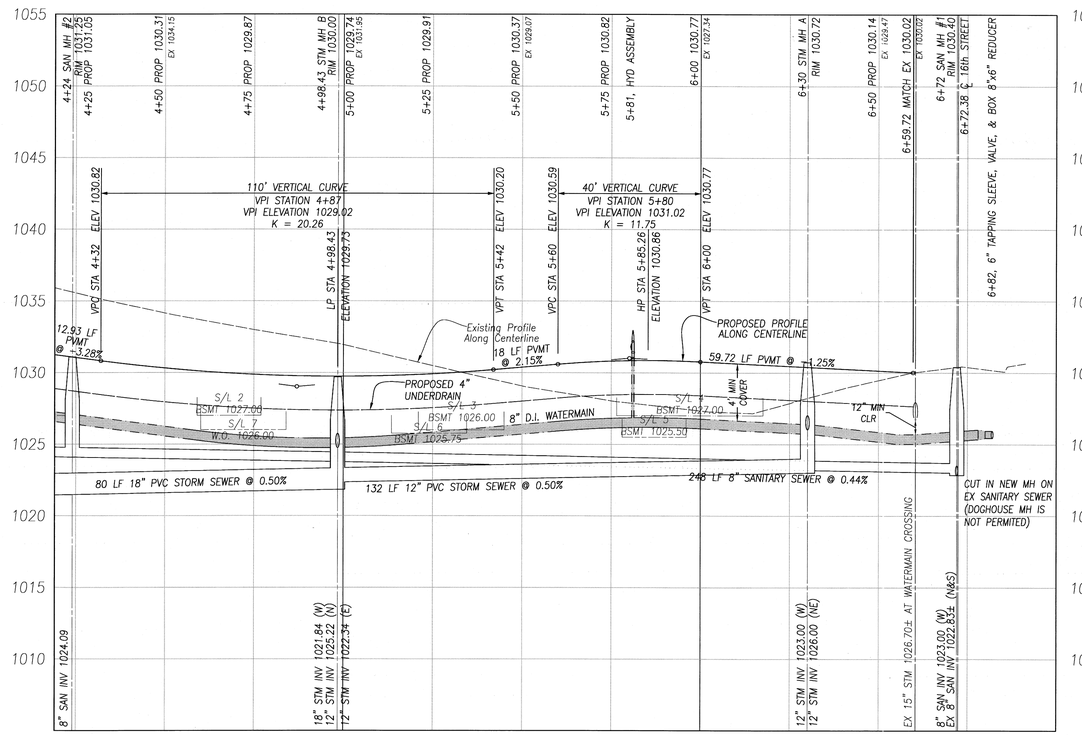


PEARL AVE 40'





BALLINGER AVENUE 50'



16th STREET

IMPROVEMENT PLANS FOR:

BALLINGER ESTATES PHASE II

PLAN AND PROFILE -BALLINGER AVENUE; PEARL AVENUE

STATE OF OHIO ★ ENGINEER ★ PROFESSIONAL
MATTHEW C. NEFF E-49050 REGISTERED

Revisions		
Number	Date	Description
1	05/04/07	REVISIONS PER OEPA
2	05/22/07	REVISIONS PER CITY

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale	Vertical Scale
1" = 20'	-
Original Submission	Last Plot Date
Feb 06, 2007	May 23, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 13 of 20

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg May 23, 2007 - 5:09pm

WOODLAND AVENUE

SCALE: 1" = 20'

NOTES:
1) BUILDING FOOTPRINTS AND BASEMENT OPTIONS ARE ILLUSTRATIVE ONLY AND DO NOT NECESSARILY REFLECT THE FINAL PLAN FOR EACH LOT AND DWELLING. THIS WILL BE DETERMINED AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

2) ALL ELEVATIONS SHOWN FOR HOUSES ON EACH LOT WILL BE VERIFIED AND ADJUSTED AS NECESSARY AT TIME OF INDIVIDUAL SITE PLAN SUBMISSION.

3) STORM AND SANITARY CONNECTION INSTALLATION SHALL INCLUDE TEST TEE, PIPE THROUGH UTILITY EASEMENT AND ANY CLEANOUTS WHERE INDICATED. WATER CONNECTION INSTALLATION SHALL INCLUDE CURB SHUT-OFFS.

4) ALL PROPOSED WATERMAIN IS TO BE DUCTILE IRON, CLASS 52 WITH POLYWRAP.

MASSILLON NOTES:
1) WOODLAND AVENUE IS PAVED IN A SPECIFIC MANNER FOR DRAINAGE. CONTRACTOR IS TO REPLACE PAVEMENT EXACTLY AS BEFORE PER THE DIRECTION OF THE CITY ENGINEER'S OFFICE.

2) CONTRACTOR TO COORDINATE UTILITY POLE RELOCATION WITH THE PROPER UTILITIES.

3) CONTRACTOR TO COORDINATE SIGN RELOCATION WITH THE CITY STREET DEPARTMENT, MARK LIGHTFOOT AT (330) 833-5764.

06-07159
ALFRED D JENKINS, JR. & KIM E EVANS
H.N. 1525

06-07160
VINCENT J & MILDRED L WALTERS
H.N. 1519

06-01520
MARTHA CAMBELL
(VACANT)

PEARL AVENUE 50'

06-02180
JOSEPH KIEFFER
LOT No. 11414
H.N. 1404

06-17830
CLINTON O. BODIFORD, TRUSTEE
LOT No. 15594
#1405 GIBSON AVE SE

14th STREET 40'

LEGEND
- EX SAN MANHOLE
- EX STORM MANHOLE
- EX CATCH BASIN
- EX HYDRANT
- EX WATER LINE VALVE
- EX WATER SERVICE VALVE
- EX WATER MANHOLE
- EX WATER METER
- UTILITY POLE
- UTILITY POLE w/TRANSFORMER
- LIGHT POLE
- GUY ANCHOR
- CHAIN LINK FENCE
- WOOD FENCE
- GAS LINE MARKER
- GAS VALVE
- GAS METER
- ELECTRIC GROUND TRANSFORMER
- CABLE TV PEDESTAL
- ELECTRIC MANHOLE
- ELECTRIC METER
- DECIDUOUS TREE
- CONIFEROUS TREE
- ORANGE CONSTRUCTION FENCE
- SILT FENCE

CONTRACTOR TO INSPECT EXISTING CATCH BASIN PRIOR TO CONNECTION. REPORT TO CITY ENGINEER OF CATCH BASIN CONDITION. CATCH BASIN TO BE REPAIRED OR REPLACED PER CITY ENGINEER.

POSSIBLE CLEARANCE CONFLICT:
CONTRACTOR IS TO DETERMINE DEPTH OF THE GAS MAIN PRIOR TO INSTALLATION OF STORM SEWER. CONTACT ENGINEER WITH ELEVATION TO ADJUST STORM SEWER.

STATE OF OHIO PROFESSIONAL ENGINEER
C. MATTHEW NEFF
E-49050
REGISTERED

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
PLAN AND PROFILE
14th STREET

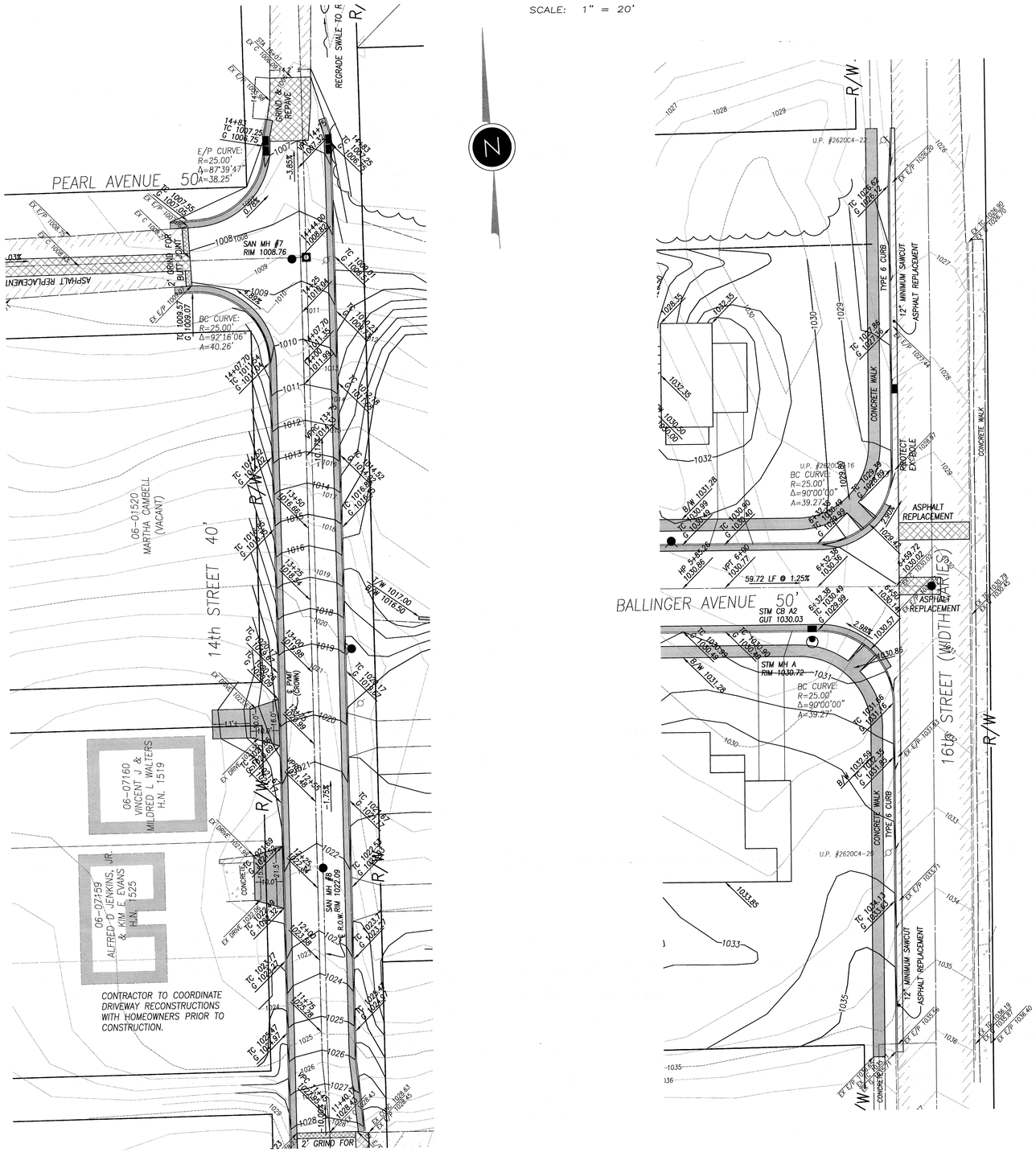
Revisions Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 - Cleveland OH 44125
tel: 216.663.8820 - fax: 216.663.8821

Horizontal Scale	Vertical Scale
1" = 20'	1" = 5'
Original Submission	Last Plot Date
Feb 06, 2007	May 01, 2007
Drawn By	Checked By
DLN	
Project Number	Field Crew
7323	FS & BH

Sheet 14 of 20

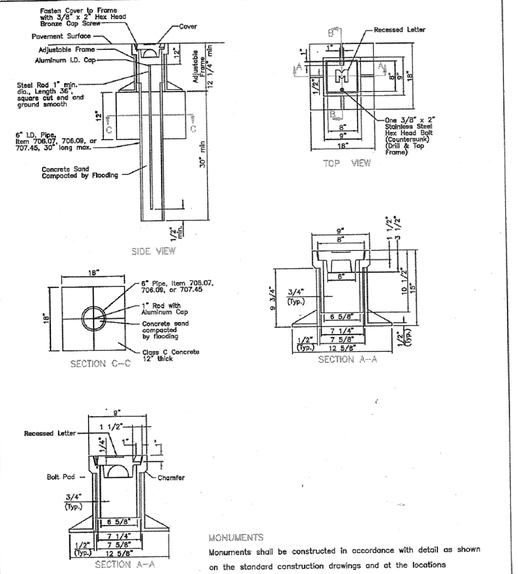
Drawing File: J:\7300-7399\7323 massillon - subd site\7323.dwg May 01, 2007 - 12:49pm



Francis H. Cicchinelli, Jr.
Massillon Means More!

CITY OF MASSILLON ENGINEERING
151 LINCOLN WAY EAST
MASSILLON, OHIO (330)830-1722
FAX: (330)830-1788

CENTERLINE MONUMENT DETAILS



MONUMENTS

Monuments shall be constructed in accordance with detail as shown on the standard construction drawings and at the locations on previous sheets.

STATE OF OHIO ★ ENGINEER ★ MATTHEW C NEFF E-49050 REGISTERED PROFESSIONAL ENGINEER

IMPROVEMENT PLANS FOR:

BALLINGER ESTATES PHASE II

INTERSECTION DETAILS

Revisions		
Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

Horizontal Scale 1" = 20'	Vertical Scale n/a
Original Submission Feb 06, 2007	Last Plot Date May 01, 2007
Drawn By DLN	Checked By
Project Number 7323	Field Crew FS & BH

Sheet 15 of 20

Drawing File: J:\7300-7399\7323 massillon – subd site\7323.dwg May 01, 2007 – 12:49pm

DIMENSIONS			QUANTITIES ONE HEADWALL	
DIAMETER	H	L	CONCRETE CU. YDS.	REINFORCING STEEL LBS.
12"	4'-11"	5'-8"		
15"	5'-2"	7'-0"	1.7	41
18"	5'-5"	8'-4"	2.2	57
21"	5'-8"	9'-8"	2.8	62
24"	5'-11"	11'-0"	3.3	69
27"	6'-2"	12'-4"		
30"	6'-5"	13'-8"	4.7	92
36"	7'-0"	16'-4"	6.5	105

L CIRCULAR SECTIONS = 5D + 4t
L ELLIPTICAL OR PIPE-ARCH = 4R + 4t + S
H CIRCULAR SECTIONS = D + t + 44"
H ELLIPTICAL OR PIPE-ARCH = R + t + 44"

D= DIAMETER OF PIPE
R= RISE OF PIPE
S= SPAN OF PIPE
t = THICKNESS OF BARREL
L= LENGTH OF HEADWALL
H= HEIGHT OF HEADWALL

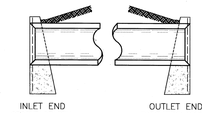
NOTES

No. 1 HEADWALL Where required will be provided for nonskewed culverts having a diameter or rise of 36 inches or less. CONCRETE shall be Class "C"

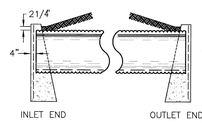
REINFORCING STEEL BARS shall be 5/8 inch round.

DIMENSIONS AND QUANTITIES are shown for circular sections only. It will be necessary to determine dimensions for the No. 1 headwall required for reinforced elliptical concrete pipe or corrugated metal pipe arches in accordance with the equations listed on this drawing. Chamfer all exposed corners 3/4 of an inch.

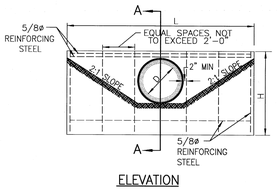
FOUNDATION Where the soil borings indicate a bearing capacity of less than 2600 pounds per square foot, it will be necessary to increase the width of the base.



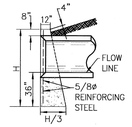
RIGID PIPE



CORRUGATED PIPE



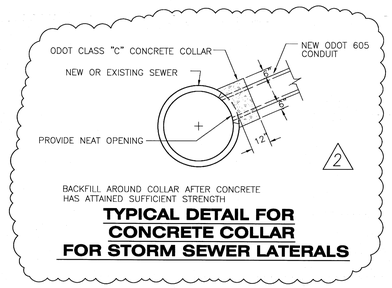
ELEVATION



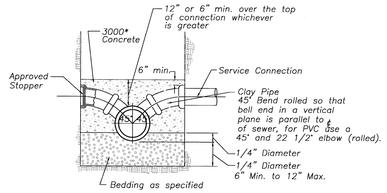
SECTION A–A

END TREATMENT AT HEADWALL

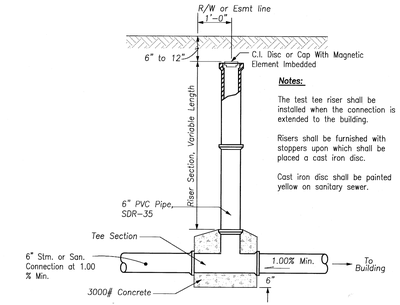
STANDARD No. 1 HEADWALL



TYPICAL DETAIL FOR CONCRETE COLLAR FOR STORM SEWER LATERALS



TYPICAL Y-BRANCH DETAIL



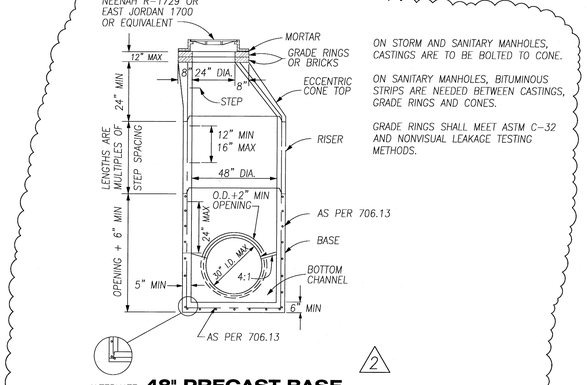
Notes:

The test tee riser shall be installed when the connection is extended to the building.

Risers shall be furnished with stoppers upon which shall be placed a cast iron disc.

Cast iron disc shall be painted yellow on sanitary sewer.

6" x 6" TEST TEE & 6" RISER FOR STORM SEWERS AND SANITARY SEWERS

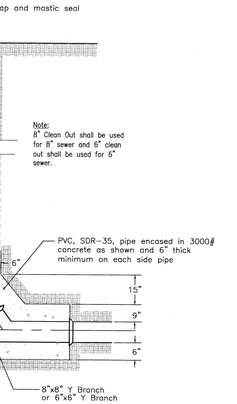


ON STORM AND SANITARY MANHOLES, CASTINGS ARE TO BE BOLTED TO CONE.

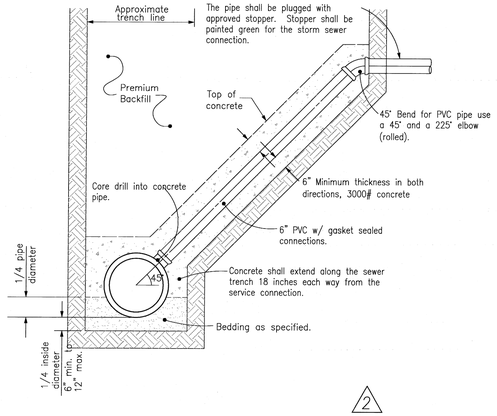
ON SANITARY MANHOLES, BITUMINOUS STRIPS ARE NEEDED BETWEEN CASTINGS, GRADE RINGS AND CONES.

GRADE RINGS SHALL MEET ASTM C-32 AND NONVISUAL LEAKAGE TESTING METHODS.

48" PRECAST BASE FOR 30" AND SMALLER STORM SEWER MANHOLES



CLEAN OUT IN GRASS AREA

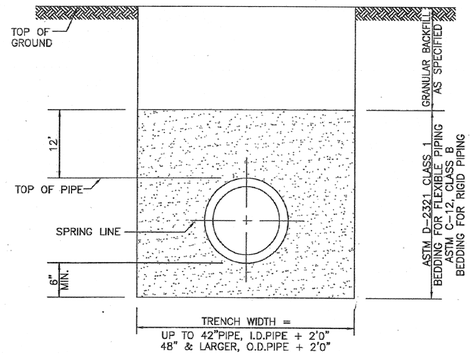


STORM SEWER LATERAL CONNECTION RISER DETAIL FOR SUBLOTS 11 AND 12

Drawing File: J:\7300-7399\7323 Massillon - Subd Stds\7323.dwg May 23, 2007 - 5:10pm

CITY OF MASSILLON ENGINEERING
151 LINCOLN WAY EAST
MASSILLON, OHIO (330)830-1722
FAX: (330)830-1786

TRENCH DETAIL

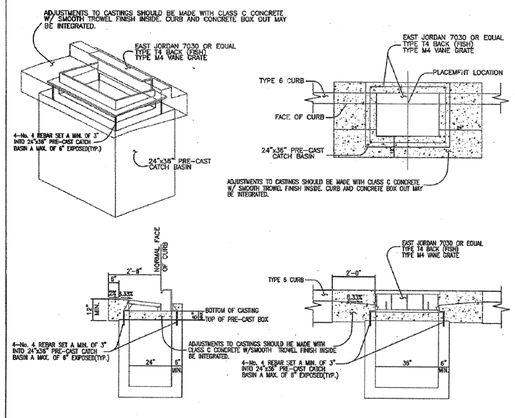


NOTES
(*) MUST BE USED WHEN WIDTH OF TRENCH IS GREATER THAN 3' AT THE SUBBASE LEVEL

Francis H. Cicchinelli, Jr.

CITY OF MASSILLON ENGINEERING
151 LINCOLN WAY EAST
MASSILLON, OHIO (330)830-1722
FAX: (330)830-1786

CATCH BASIN DETAIL

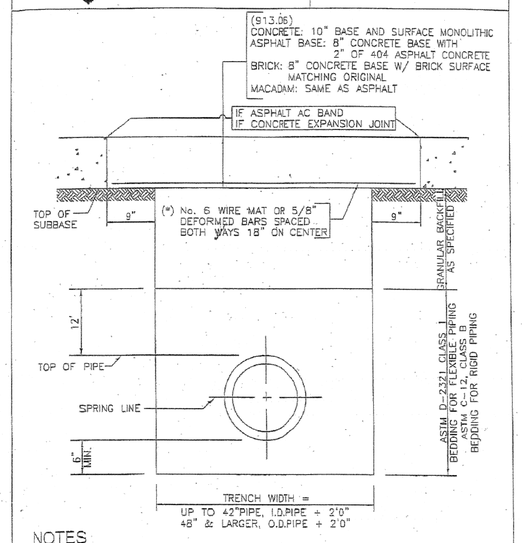


Massillon Curb Inlet (MASS CI-1)

Francis H. Cicchinelli, Jr.

CITY OF MASSILLON ENGINEERING
151 LINCOLN WAY EAST
MASSILLON, OHIO (330)830-1722
FAX: (330)830-1786

OPEN CUT DETAIL



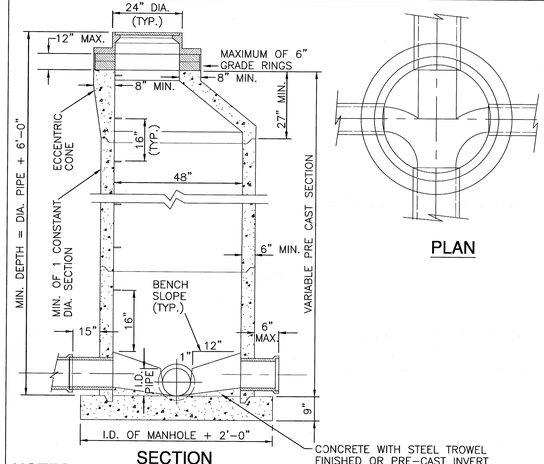
NOTES
(*) MUST BE USED WHEN WIDTH OF TRENCH IS GREATER THAN 3' AT THE SUBBASE LEVEL

CONCRETE BASE SHALL BE OF 1:2:4, 6 BAG MIX, PORTLAND CEMENT CONCRETE USING HIGH EARLY STRENGTH CEMENT AND IT MUST BE CURED AT LEAST 48 HRS.

Francis H. Cicchinelli, Jr.

CITY OF MASSILLON ENGINEERING
151 LINCOLN WAY EAST
MASSILLON, OHIO (330)830-1722
FAX: (330)830-1786

SANITARY MANHOLE TYPE 3 SEWERS 8" TO 21"



NOTES:

1. IF TOP STEP IS IN 24" DIA. OPENING IT MAY PROJECT NO MORE THAN 3 1/2".
2. M.A. IND. PS-1-PF STEPS OR APPROVED EQUAL.
3. FOR SPECIFICATIONS REGARDING CONCRETE TO BE USED IN MANHOLES SEE ITEM NO. 4&16.
4. FOR PVC & ABS PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL. THIS METHOD ALSO ACCEPTABLE FOR VCP.
5. PRE CAST MANHOLES SECTIONS SHALL MEET ASTM C-478.
6. MANHOLE JOINTS SHALL MEET ASTM C-443.
7. MANHOLE ADJUSTMENTS TO GRADE WILL BE NO GREATER THAN 12", USING PRECAST COLLARS MEETING ASTM C-478

1

STATE OF OHIO · ENGINEER · MATTHEW C NEFF E-49050 · REGISTERED · PROFESSIONAL

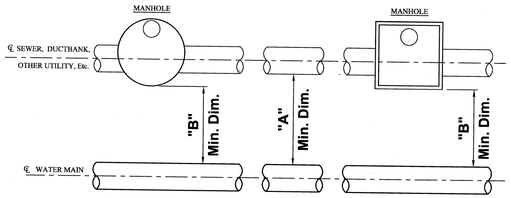
IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
STANDARD SEWER DETAILS

Revisions			
Number	Date	Description
1	05/04/07	REVISIONS PER OEPA
2	05/22/07	REVISIONS PER CITY

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale: NONE	Vertical Scale: -
Original Submission: Feb 06, 2007	Last Plot Date: May 23, 2007
Drawn By: -	Checked By:
Project Number: 7323	Field Crew: -

Sheet 16 of 20



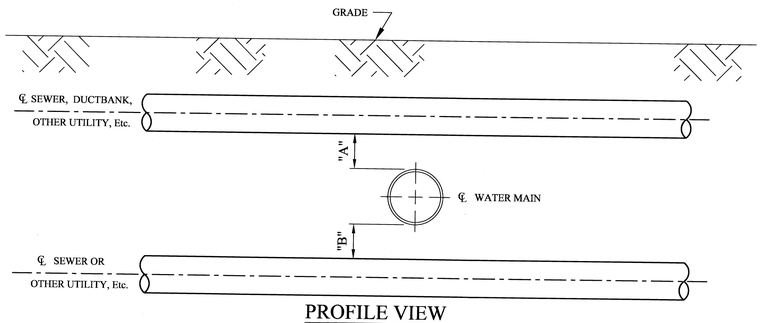
PLAN VIEW

- SEE STD-018 FOR PROFILE VIEW -

	HORIZONTAL CLEARANCE	STORM SEWER	SANITARY SEWER	GAS, DUCTBANK, OTHER UTILITY, Etc.
WHEN BOTTOM OF UTILITY PIPE IS AT OR ABOVE BOTTOM OF WATER MAIN	"A"	4'-0"	10-0" MIN.	3'-0"
	"B"	4'-0"	7'-0" MIN.	3'-0"
WHEN BOTTOM OF UTILITY PIPE IS BELOW BOTTOM OF WATER MAIN	"A"	5'-0"	10'-0" MIN.	5'-0"
	"B"	5'-0"	7'-0" MIN.	5'-0"

CLEARANCE FOR UTILITIES

NOT TO SCALE



PROFILE VIEW

- SEE STD-017 FOR PLAN VIEW -

VERTICAL CLEARANCE	SANITARY SEWER LESS THAN 24"	SANITARY SEWER 24" & LARGER	STORM SEWER, DUCTBANK, GAS, OTHER UTILITY LESS THAN 24"	STORM SEWER, DUCTBANK, GAS, OTHER UTILITY 24" & LARGER	REMARKS
"A"	18" Min.	*18" Min.	***12"	*12"	*WATER MAIN IN CASING: CLEARANCE TO TOP OF CASING
"B"	18" Min.	**18" Min.	12"	**12"	**CLEARANCE TO TOP OF UTILITY OR TOP OF CASING; WHEN UTILITY IS IN CASING

CLEARANCE FOR UTILITIES

NOT TO SCALE

***INCREASE TO 18" WHEN WIDTH OR DIAMETER OF UTILITY IS GREATER THAN DIAMETER OF WATER MAIN

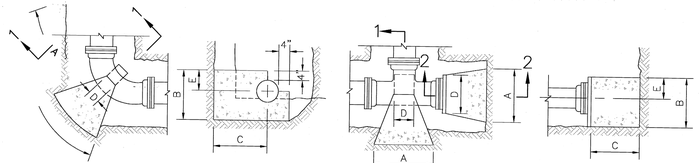


TABLE OF DIMENSION

DIA.	11 1/4° BEND			22 1/2° BEND			45° BEND			90° BEND			TEE–DEAD END		
	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.
4"	–	–	–	–	–	–	1'–0"	1'–0"	0.08	1'–6"	1'–0"	0.10	1'–1"	1'–0"	0.08
6"	–	–	–	1'–0"	1'–0"	0.08	1'–7"	1'–2"	0.12	2'–6"	1'–4"	0.17	1'–10"	1'–4"	0.15
8"	1'–0"	1'–0"	0.07	1'–5"	1'–2"	0.11	2'–5"	1'–4"	0.17	2'–7"	1'–8"	0.23	2'–6"	1'–8"	0.23
10"	1'–2"	1'–2"	0.09	2'–0"	1'–4"	0.15	3'–0"	1'–8"	0.25	4'–3"	2'–2"	0.44	3'–4"	2'–0"	0.32
12"	1'–5"	1'–4"	0.23	2'–6"	1'–6"	0.35	3'–8"	2'–0"	0.65	5'–0"	2'–8"	1.10	4'–1"	2'–4"	0.82
14"	1'–8"	1'–6"	0.28	3'–0"	1'–8"	0.45	4'–3"	2'–4"	0.84	6'–0"	3'–0"	1.40	4'–10"	2'–8"	1.05
16"	2'–0"	1'–8"	0.33	3'–4"	2'–0"	0.58	4'–10"	2'–8"	1.06	6'–10"	3'–6"	1.77	5'–7"	3'–0"	1.30
18"	2'–4"	1'–10"	0.53	3'–7"	2'–4"	0.95	5'–6"	3'–0"	1.73	7'–6"	4'–0"	2.93	6'–1"	3'–6"	2.18
20"	2'–7"	2'–0"	0.61	3'–10"	2'–8"	1.15	6'–1"	3'–4"	2.05	8'–4"	4'–6"	3.61	6'–7"	4'–0"	2.62
24"	3'–5"	2'–2"	0.97	5'–0"	3'–0"	1.91	7'–7"	3'–10"	3.44	9'–9"	5'–6"	6.20	8'–6"	4'–6"	4.47

DIMENSION C
4"–10" DIA.= 2'–0"
12"–16" DIA.= 3'–0"
18"–20" DIA.= 4'–0"
24" DIA.= 5'–0"

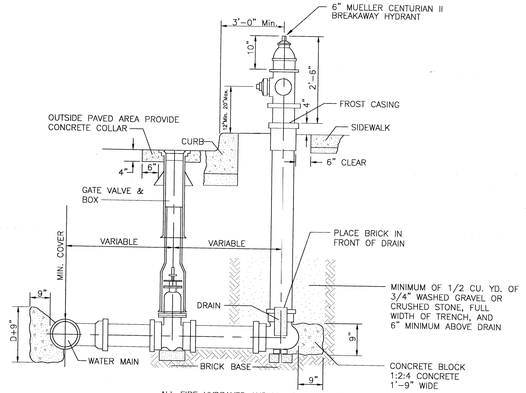
DIMENSION D
4"–10" DIA.= 1'–0"
12"–24"DIA.= 2'–0"

DIMENSION E
FOR ALL DIAMETERS
E=D/2 + 4"

NOTE: BLOCKING DESIGN BASED ON WORKING PRESSURE 150psi+ 100psi WATER HAMMER AND SOIL BEARING 3000psf.

THRUST BLOCKING DETAILS FOR BENDS IN HORIZONTAL PLANE

WORKING PRESSURE UP TO 150psi



ALL FIRE HYDRANTS AND VALVE BOXES SHALL BE SECURELY BRACED WHEN SET AND BACKFILLED
ALL FIRE HYDRANTS, VALVES, VALVE BOXES, AND FITTINGS SHALL MEET THE LATEST STANDARD SPECIFICATIONS FOR CONSTRUCTING WATER MAINS AND APPURTENANCES OF THE CITY OF BEREA.

TYPICAL 6" FIRE HYDRANT ASSEMBLY INSTALLATION

N.T.S.

TRENCH DETAIL

SERVICE CONNECTION

EPA NOTES:

1) BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.

2) THE PROPOSED IMPROVEMENTS WILL PROVIDE A MINIMUM 35 PSI PRESSURE AT THE CURB STOP DURING NORMAL OPERATING CONDITIONS.

STATE OF OHIO ★ ENGINEER ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
STANDARD WATERMAIN DETAILS

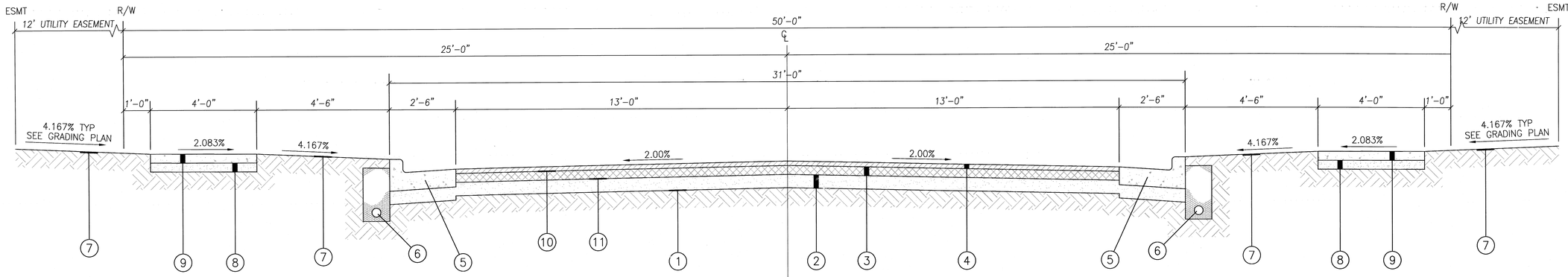
Revisions Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

Horizontal Scale	Vertical Scale
NONE	-
Original Submission	Last Plot Date
Feb 06, 2007	Apr 27, 2007
Drawn By	Checked By
-	
Project Number	Field Crew
7323	-

Sheet 17 of 20

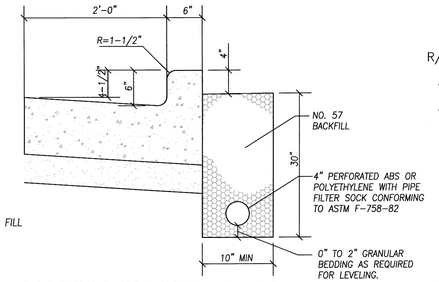
Drawing File: J:\7300–7399\7323 Massillon – Subd Site\7323.dwg Apr 27, 2007 – 12:16pm



15th STREET / BALLINGER AVENUE
TYPICAL PAVEMENT SECTION

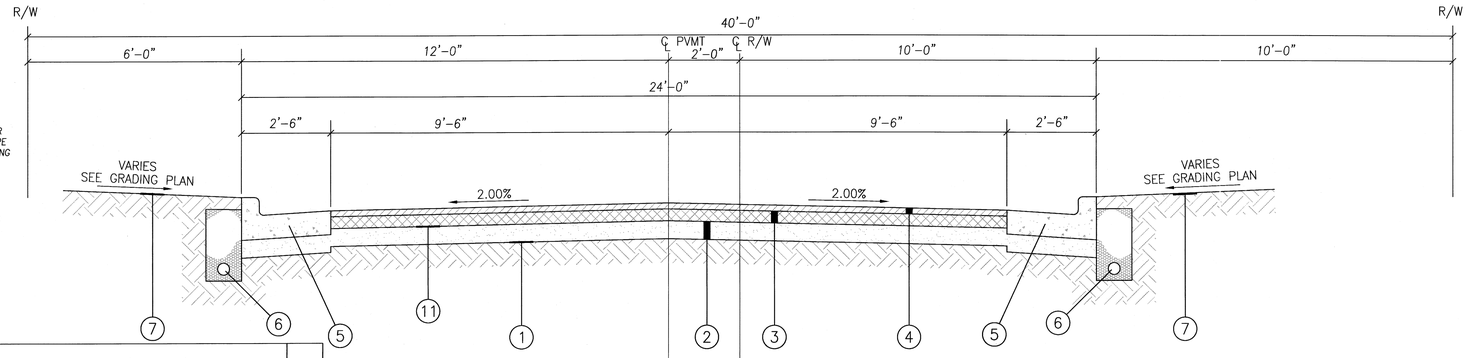
SCALE: 1" = 2' - 0"

1. ODOT ITEM 203 – SUBGRADE COMPACTION / PROOF ROLLING
2. ODOT ITEM 304 – 6" AGGREGATE BASE COURSE – (2) 3" LIFTS
3. ODOT ITEM 301 – 4" BITUMINOUS AGGREGATE BASE COURSE
4. ODOT ITEM 404 – 1-1/2" ASPHALT CONCRETE SURFACE COURSE
5. ODOT ITEM 609 – MASSILLON STANDARD CURB
6. ODOT ITEM 605 – 4" PERFORATED ABS SHALLOW PIPE UNDERDRAIN
7. ODOT ITEM 659 – SEEDING AND MULCHING, INCLUDING 4" MINIMUM TOPSOIL FILL
8. ODOT ITEM 304 – 4" AGGREGATE BASE
9. ODOT ITEM 608 – 4" CONCRETE SIDEWALK (6" AT DRIVES)
10. ODOT ITEM 402 – TACK COAT
11. ODOT ITEM 408 – PRIME COAT
12. STANDARD TYPE 6 CURB



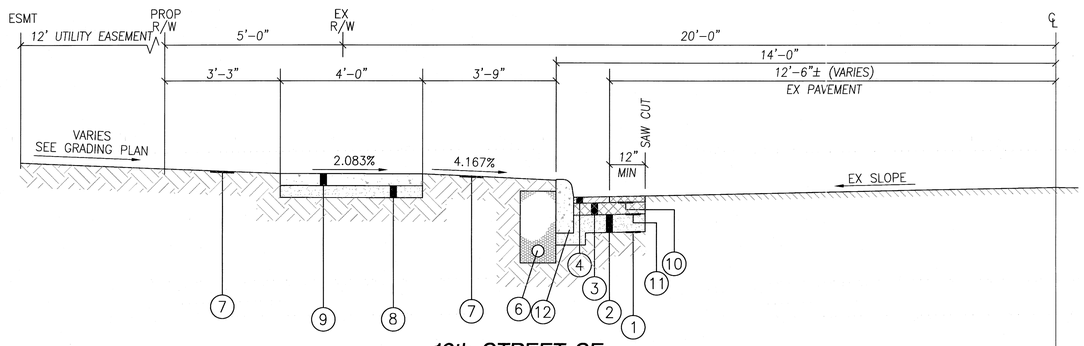
MASSILLON STANDARD
CURB & GUTTER

SCALE: 1" = 1'-0"



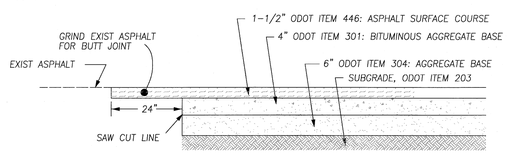
14th STREET
TYPICAL PAVEMENT SECTION

SCALE: 1" = 2' - 0"

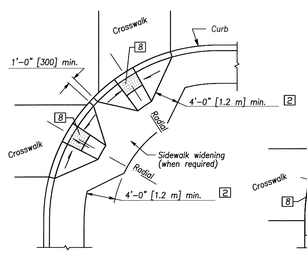


16th STREET SE
TYPICAL PAVEMENT SECTION

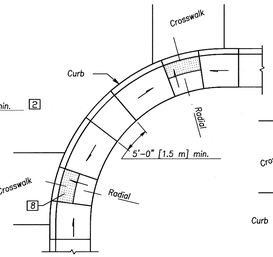
SCALE: 1" = 2' - 0"



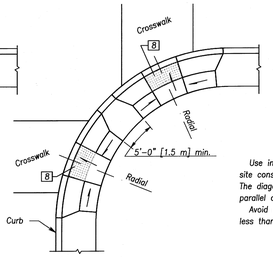
BUTT JOINT DETAIL



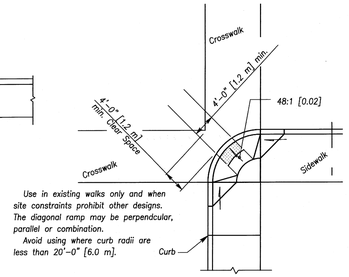
DESIGN A
PERPENDICULAR RAMP



DESIGN B
PARALLEL RAMP

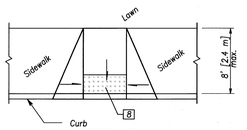


DESIGN C
COMBINATION RAMP

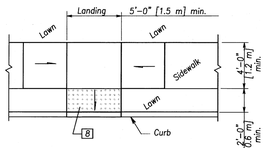


DESIGN D
DIAGONAL RAMP

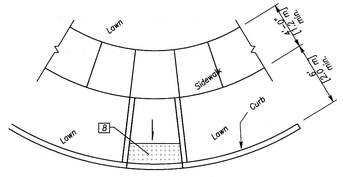
CORNER CURB RAMP DESIGNS



DESIGN E
PERPENDICULAR RAMP



DESIGN F
PARALLEL RAMP



DESIGN G
PERPENDICULAR RAMPS
w/o FLARES

MID BLOCK CURB RAMP DESIGNS

NOTES

1. May be reduced to 3'-0" [915] in existing sidewalks if the landing is unconstrained along the back edge.
2. May be reduced to 3'-4" [1.02 m] in existing sidewalks to better fit the walk configuration or where site conditions are restricted by narrow walks, pole foundations, drainage inlets, etc. The width may be tapered.
3. Where landing width (D) has been reduced to 3'-0" [915] the flared sides shall have a maximum slope of 12:1 [0.083].

   Flared sides are not required where the edges of a curb ramp are protected by landscaping or other barriers to travel by wheel chair users or pedestrians across the edge of the curb ramp. However, if the flared sides are used in these areas, they may be of any slope.
4. The slope of the ramp toward the curb is preferred to be 12:1 [0.083] or flatter related to the horizontal, but the maximum slope shall be 12:1 [0.083] relative to the existing or proposed walk slope.

   In existing sidewalks, where the maximum ramp slope (SR) is not feasible, it may be reduced as follows:

   A) 10:1 [0.10] for a max. rise of 6" [150].
   B) 8:1 [0.125] for a max. rise of 3" [75].
   C) 6:1 [0.167] over a max. run of 2'-0" [610] for historic areas where a flatter slope is not feasible.
5. The minimum length of a perpendicular ramp is 6' [2.0 m] from the back of a 6" [150] curb and may be increased where feasible to obtain a flatter ramp slope or to better blend with the walk configuration.
6. Gutter counter slopes at the foot of perpendicular curb ramps should not exceed 20:1 [0.05] over a distance of 2'-0" [610] from the curb.
7. Dimensions derived by equation are nominal. Construct ramps to meet required slopes and existing conditions.
8. Detectable Warnings (truncated domes) are to be installed in the location shown. Dimensions of the domes are 24" [610] from the back of the curb by the width of the ramp.

7-28-00 | CURB RAMPS | BP-7.1 | 2 / 3

Drawing File: s:\7300-7399\7323 Massillon - Subd Ste\7323.dwg Apr 30, 2007 - 12:01pm

STATE OF OHIO ★ ENGINEER ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL

IMPROVEMENT PLANS FOR:
BALLINGER ESTATES PHASE II
TYPICAL PAVEMENT SECTION & PAVEMENT DETAILS

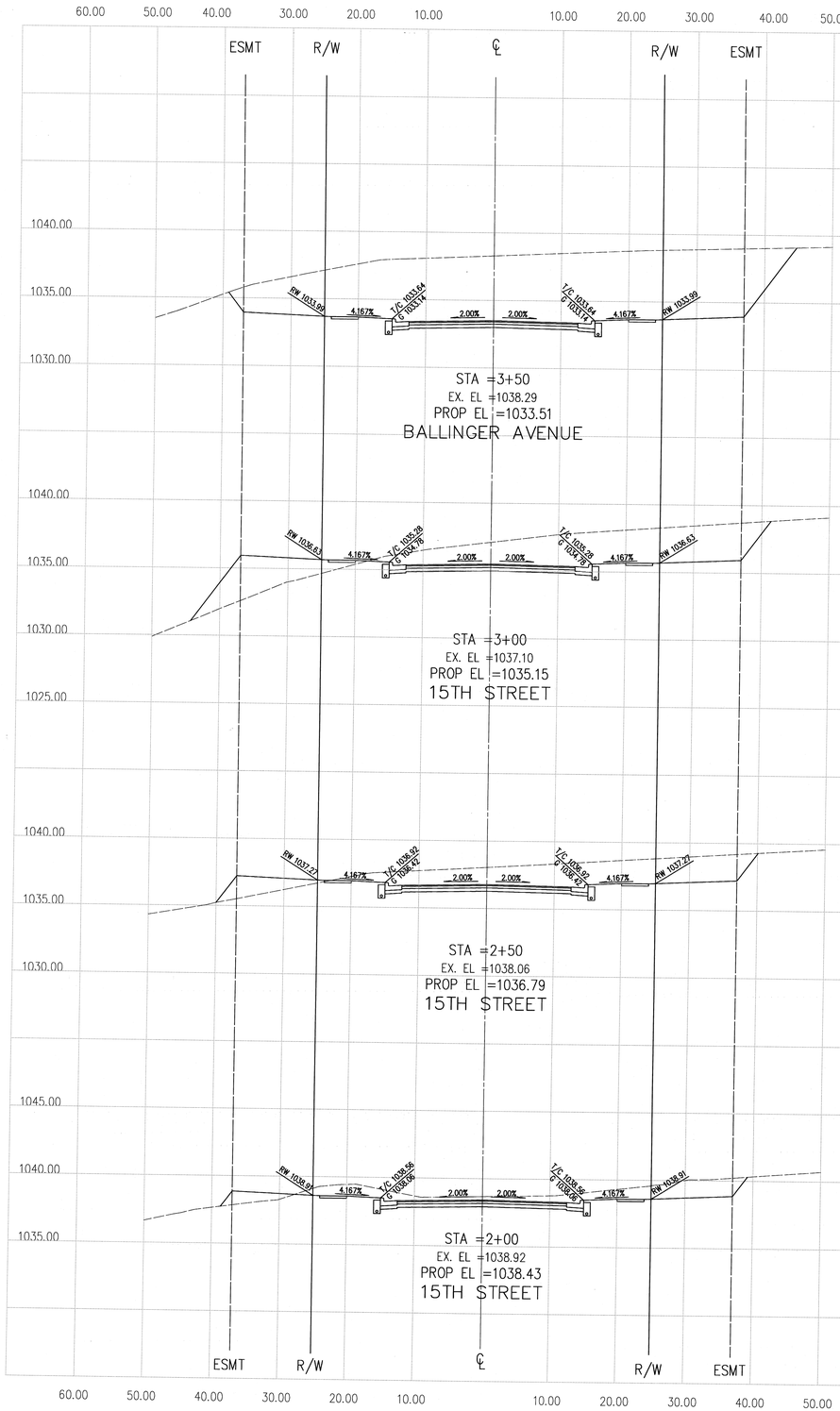
Revisions Number	Date	Description

PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

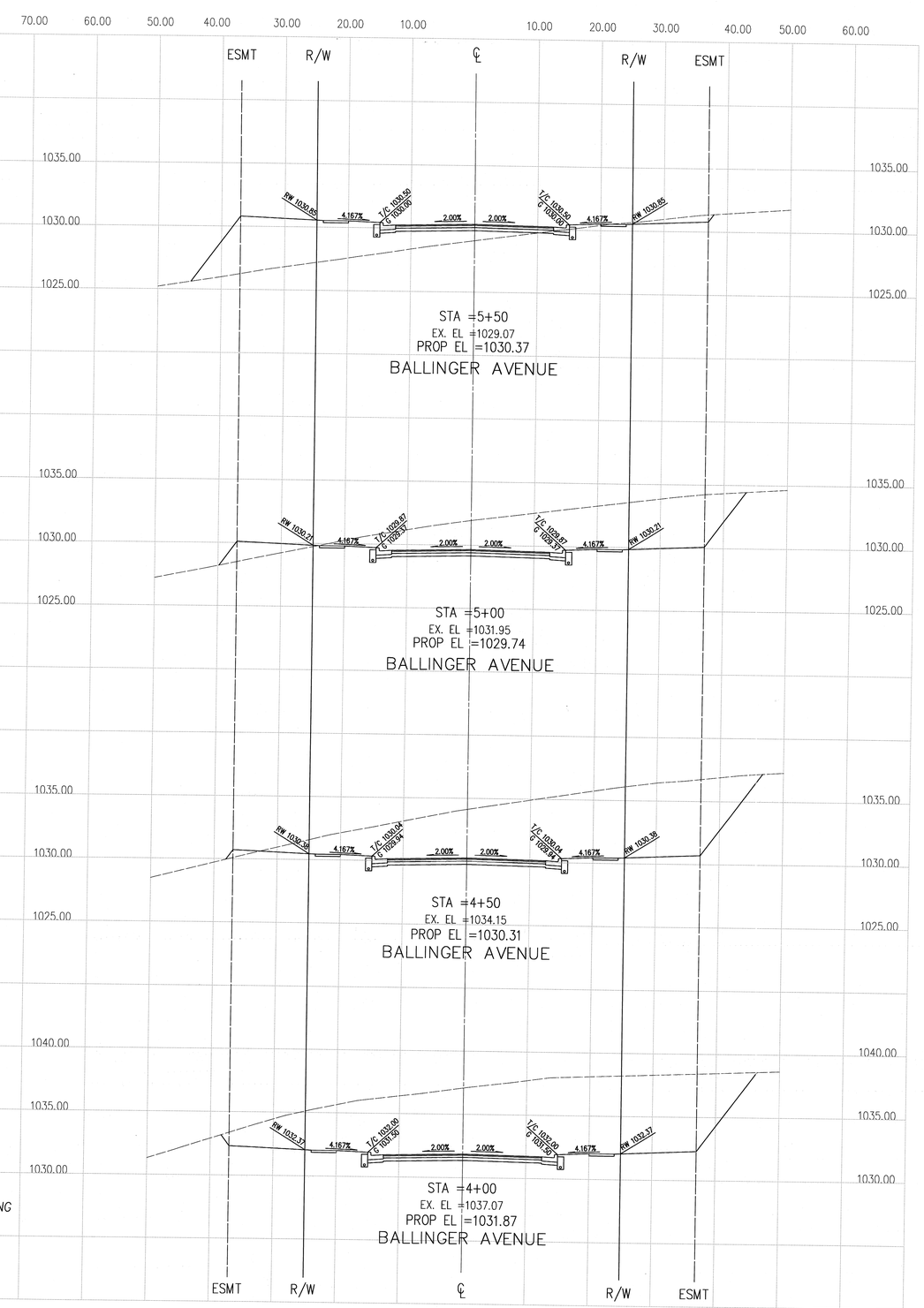
N

Horizontal Scale	Vertical Scale
NONE	-
Original Submission	Last Plot Date
Feb 06, 2007	Apr 30, 2007
Drawn By	Checked By
-	
Project Number	Field Crew
7323	-

Sheet 18 of 20



FOR GRADING OUTSIDE OF RIGHT OF WAY, SEE GRADING PLAN SHEET No. 9.



Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg May 23, 2007 - 5:11pm

STATE OF OHIO ★ ENGINEER ★ MATTHEW C NEFF E-49050 REGISTERED ★ PROFESSIONAL

IMPROVEMENT PLANS FOR: BALLINGER ESTATES PHASE II

CROSS SECTIONS

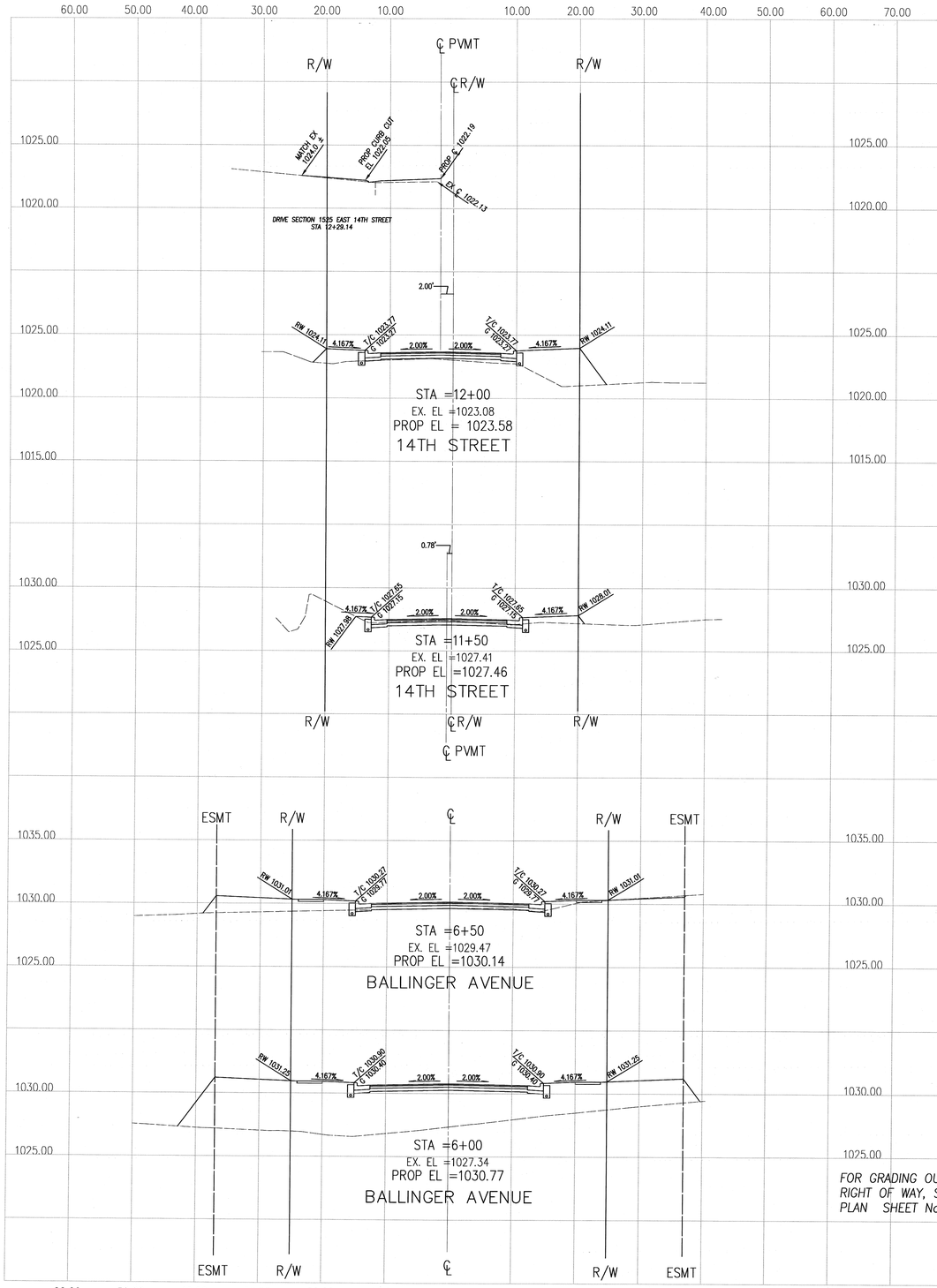
15TH STREET & BALLINGER AVENUE

Revisions		
Number	Date	Description
2	05/22/07	REVISIONS PER CITY

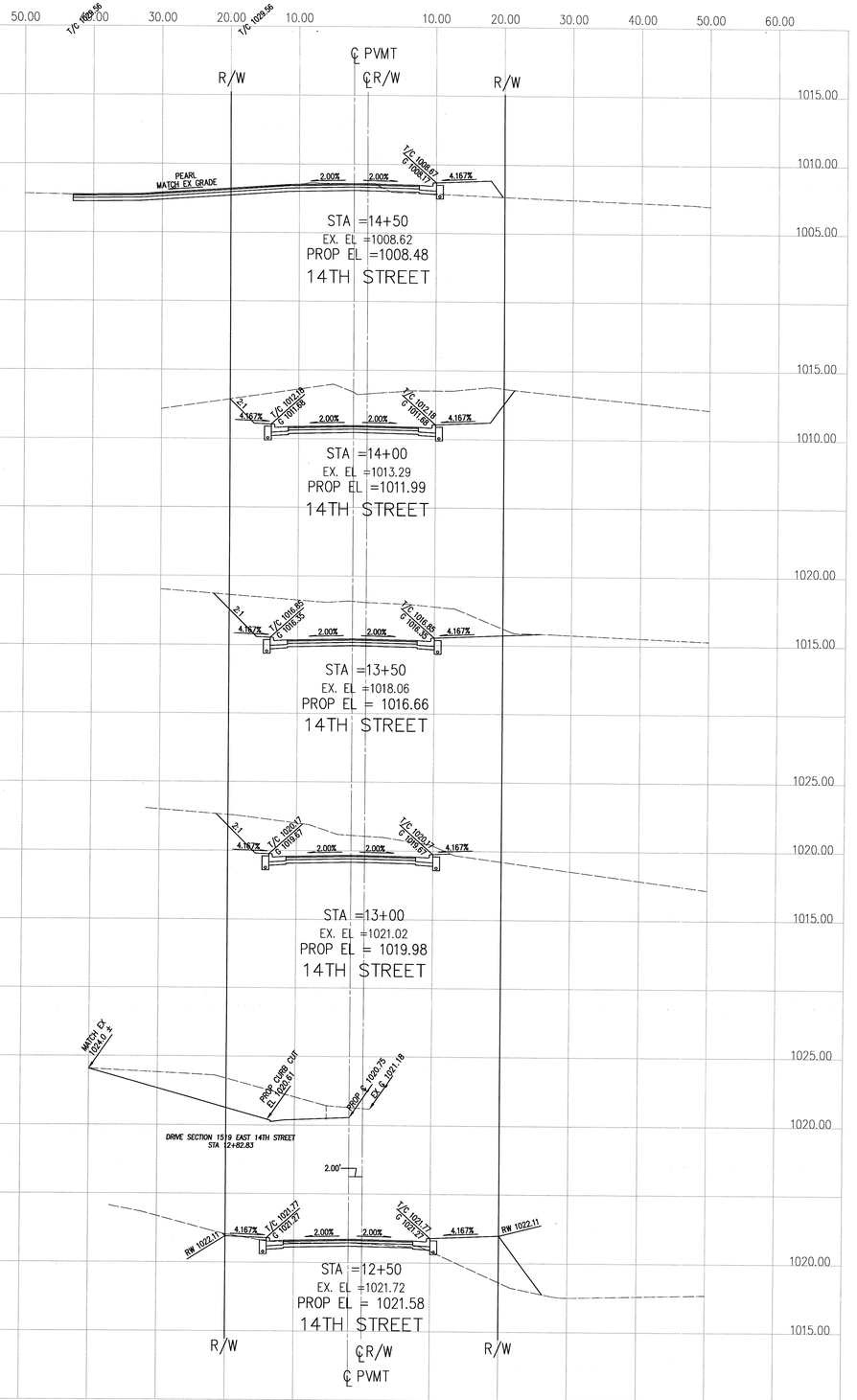
PLANNERS | ENGINEERS | SURVEYORS
mNEFFdesign group
DESIGNING LAND FOR YOUR WORLD
5422 East 96th Street, Suite 120 • Cleveland OH 44125
tel: 216.663.8820 • fax: 216.663.8821

Horizontal Scale 1" = 10'	Vertical Scale 1" = 5'
Original Submission Feb 06, 2007	Last Plot Date May 23, 2007
Drawn By -	Checked By
Project Number 7323	Field Crew -

Sheet 19 of 20



FOR GRADING OUTSIDE OF RIGHT OF WAY, SEE GRADING PLAN SHEET No. 9.



PLANNERS | ENGINEERS | SURVEYORS

mNEFF design group

DESIGNING LAND FOR YOUR WORLD

5422 East 96th Street, Suite 120 · Cleveland OH 44125
tel: 216.663.8820 · fax: 216.663.8821

STATE OF OHIO ★ ENGINEER ★ MATTHEW C. NEFF E-49050 REGISTERED ★ PROFESSIONAL

IMPROVEMENT PLANS FOR: BALLINGER ESTATES PHASE II

CROSS SECTIONS

BALLINGER AVENUE & 14TH STREET

Revisions Number	Date	Description
2	05/22/07	REVISIONS PER CITY

Horizontal Scale 1" = 10'	Vertical Scale 1" = 5'
Original Submission Feb 06, 2007	Last Plot Date May 23, 2007
Drawn By -	Checked By
Project Number 7323	Field Crew -

Sheet 20 of 20

Drawing File: J:\7300-7399\7323 Massillon - Subd Site\7323.dwg May 23, 2007 - 5:12pm