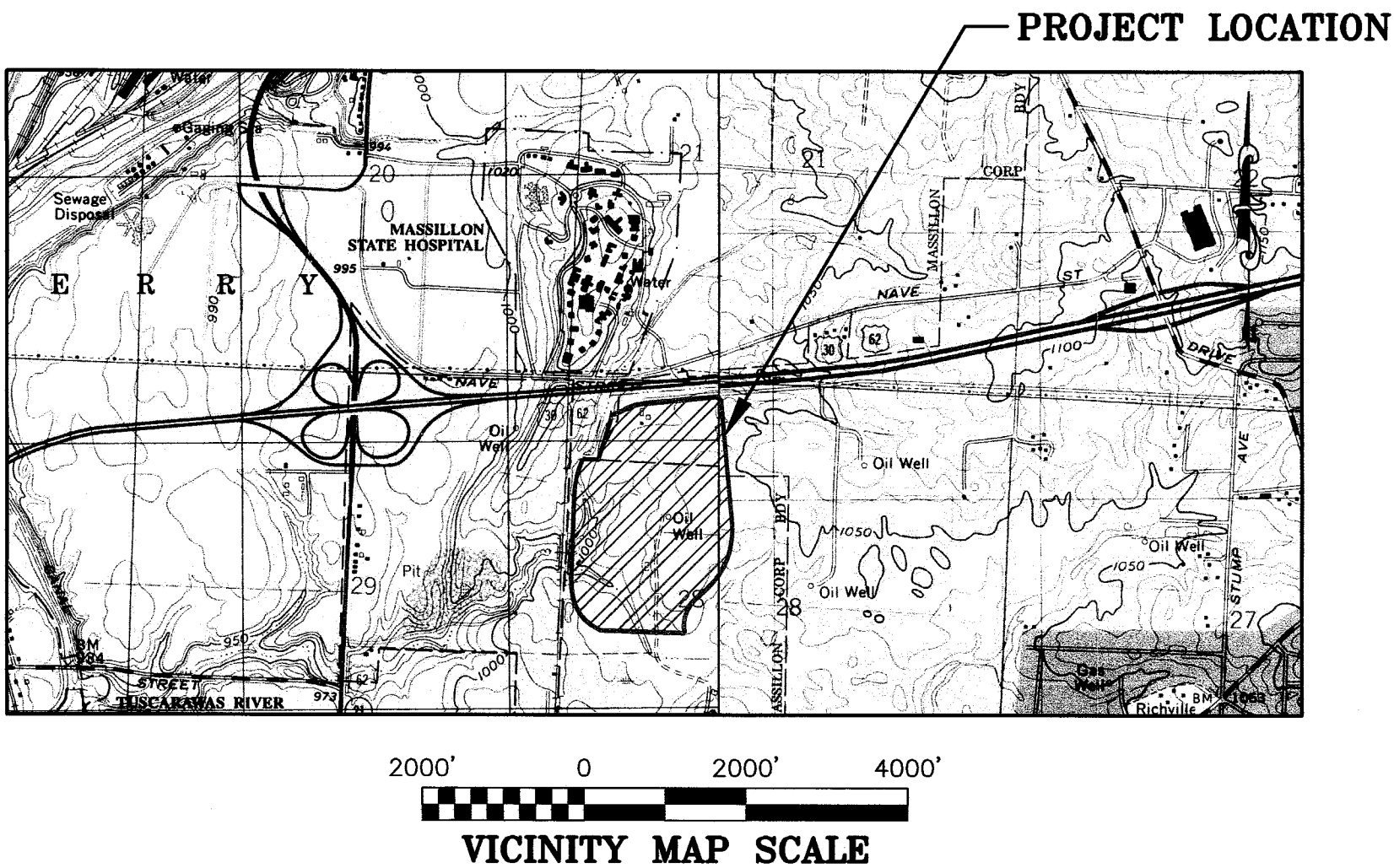


CAD FILE: R:\Common\Craig Klein\030-2080 Baker Hughes\TEMPORARY FACILITY PLAN\COVER.dwg PLOT DATE/TIME: 3/7/2013 3:49 PM

**SITE PLANS
FOR
BAKER HUGHES JOINT FACILITY
CONTRACT #1 - SITE GRADING/UTILITY PACKAGE
CITY OF MASSILLON
STARK COUNTY, OHIO**

**DECEMBER 2012
JANUARY 2013
MARCH 2013**



Proposed Subdivision Name	Baker Hughes, Massillon, Ohio
Owner:	Baker Hughes Oilfield Operations, Inc.
Address:	2929 Allen Pkwy, Suite 2100 Houston, TX 77079
Phone:	(713) 439-8227
Developer:	Crossland Construction
Address:	13919 N. Harvey Ave. Oklahoma City, OK 73013
Phone:	(405) 748-5043
Engineer:	Thrasher Engineering, Inc.
Address:	4150 Belden Village St. Suite 101 Canton, Ohio 44718
Phone:	(330) 491-8170
Legal description of parcel	OL 1099 - 108.79 AC.
Total Acreage of development	25.08 Ac.
Existing Zoning	I-2
Statement of Use	Industrial
Set Backs	
Front Yard Set Back Required	60 Feet
Front Yard Set Back Actual	80 Feet
Side Yard Set Back (If parcel does not abut residential)	0 Feet
Rear Yard Set Back (If parcel does not abut residential)	0 Feet
Design Elements	
Number of Employees on Largest Shift	24 Employees
Number of Parking spaces required	5 spaces plus 1-1/2 / employee on largest shift
Number of Car Spaces Provided (41 Req.)	Provided 57 Parking Spaces
Number of ADA Spaces Provided	3 ADA Spaces
Number of truck Spaces Provided	20 Parking Spaces
Screening Mound	40 Feet
Height of Structure (permitted)	60 Feet
Fencing (permitted 1169.02.C)	72" with Barbed Wire

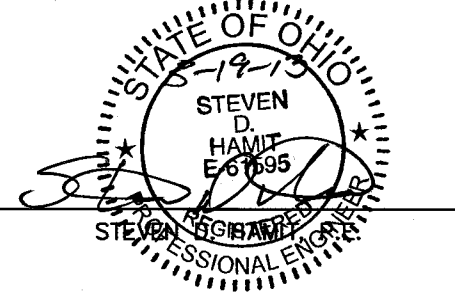


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SITE PLAN	3
SITE PLAN DETAIL	3A
LAYOUT & DETAIL PLAN	4
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DITCH DETAILS	5A, 5B
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UTILITY PLAN DETAIL	6A
LANDSCAPING PLAN	6B
BASIN DETAILS	6C, 6D
SANITARY PLAN AND PROFILE	6E
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SANITARY NOTES	14
SITE DETAILS	15, 15A, 16
WATER LINE DETAILS	17

APPROVED BY THE MASSILLON CITY ENGINEER THIS 22nd
DAY OF MARCH, 2013.
KA. D.C.
KEITH A. DYLEWSKI, P.E., P.S.

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

OEPA NOI Permit Number 3GC05837*A



ISSUED FOR PERMITS BY: _____ DATE: _____
ISSUED FOR PRICING BY: _____ DATE: _____
ISSUED FOR CONSTRUCTION BY: _____ DATE: _____

PHONE (330) 491-8170 **THRASHER** ENGINEERING (FAX) (330) 491-8342
CIVIL, ENVIRONMENTAL, AND CONSULTING
4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718

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BAKER HUGHES FOR CROSSLAND CONSTRUCTION MASSILLON, OHIO STARK COUNTY TITLE SHEET										SHEET No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
THRASHER ENGINEERING PHONE (330) 491-8170 (FAX) (330) 491-8342 CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES 4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718 COPYRIGHT © 2011, THRASHER ENGINEERING INC.										SCALE: 1"=100'										SURVEY DATE:										SURVEY BY:										DRAWN: CMK										DATE: 01/14/13										3										CMK										3-08-13										Per City of Massillon Comments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																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Total Acreage of development	25.08 Ac.
Existing Zoning	I-2
Statement of Use	Industrial

H.W. & P.A. STEINER
TRUSTEES
91.71 AC. TRACT

50' WETLAND SETBACK

50' STREAM SETBACK

MASSILLON
FOUNDATION, INC.
PT OL 765

NOTE: EXISTING VEGETATION IS
GRASS AND PARTIAL WOODS

CONTROL POINT TABLE			
CONTROL POINT TABLE	Northern	Easting	Elevation
1	397373.8790	2244898.4240	1013.87
2	398607.3030	2245094.7080	1035.83
3	398523.8211	2244214.0994	1017.56
4	398846.6491	2244275.9117	1018.66
5	399679.0800	2244095.3067	1020.73
6	398298.5710	2245080.6600	1033.24
7	400109.8380	2244547.1660	1025.75

ALL CONTROL POINTS (CP) ARE SHOWN ABOVE. THESE ARE EXISTING IRON PINS. THE CONTRACTOR IS TO CHECK THEM AND PLACE PERMANENT BENCH MARKS ON SITE. AT LOCATIONS APPROVED BY THE OWNER FOR FUTURE WORK ON SITE.

WETLAND AREA
STREAM AREA

ABBREVIATIONS
ASTM = AMERICAN SOCIETY FOR TESTING AND MATERIALS
BM = BENCH MARK
BLDG. = BUILDING
CB = CATCH BASIN
CMP = CORRUGATED METAL PIPE
CMS = CONSTRUCTION AND MATERIAL SPECIFICATIONS
CORP. = CORPORATION
CONC. = CONCRETE
CP = CONTROL POINT
DIP = DUCTILE IRON PIPE
E = EAST, EASTING
ELEC. = ELECTRICAL
ELEV. = ELEVATION
EX. = EXISTING
FFE = FINISHED FLOOR ELEVATION
FL = FLOW LINE
FM = FORCE MAIN
FT. = FEET
GAL = GALLON
HYD. = HYDRANT
HW = HEADWALL
I.D. = INNER DIAMETER
INV. = INVERT
LBS. = POUNDS
MAX. = MAXIMUM
MH = MANHOLE
MIN. = MINIMUM
N = NORTH, NORTHING
O.C. = ON CENTER
O.D. = OUTER DIAMETER
ODOT = OHIO DEPARTMENT OF TRANSPORTATION
PROP. = PROPOSED
PSI = POUNDS PER SQUARE INCH
PVC = POLYVINYL CHLORIDE
RCP = REINFORCED CONCRETE PIPE
R/W = RIGHT-OF-WAY
S = SOUTH
SAN. = SANITARY
SQ. FT. = SQUARE FEET
STM. = STORM
TBR = TO BE REMOVED
TEL. = TELECOMMUNICATIONS
TEMP. = TEMPORARY
TWP. = TOWNSHIP
TYP. = TYPICAL
VCP = VITRIFIED CLAY PIPE
W = WEST
WxH = WIDTH x HEIGHT

I hereby certify that, the contours shown herein are to be true and accurate to the best of my knowledge. All other survey information shown was provided by others and is not apart of this certification.

DAVID A. BOWEN, REGISTERED SURVEYOR No. 5753

BAKER HUGHES
FOR CROSSLAND CONSTRUCTION
MASSILLON, OHIO
STARK COUNTY
EXISTING CONDITIONS

SHEET No.

2

THRASHER
ENGINEERING

PHONE (330) 491-8170
FAX (330) 491-8342
CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES
4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718

SURVEY DATE:
SURVEY BY:
DRAWN BY:
CHECKED BY:
APPROVED:
PROJECT NO.

SCALE: 1"=100'

DATE: 01/14/13

3

OK

3-08-13

Per City of Massillon Comments

Per City of Massillon Comments

ADDITIONAL 2' FORCE MAIN FOR FUTURE GROWTH OF SITE

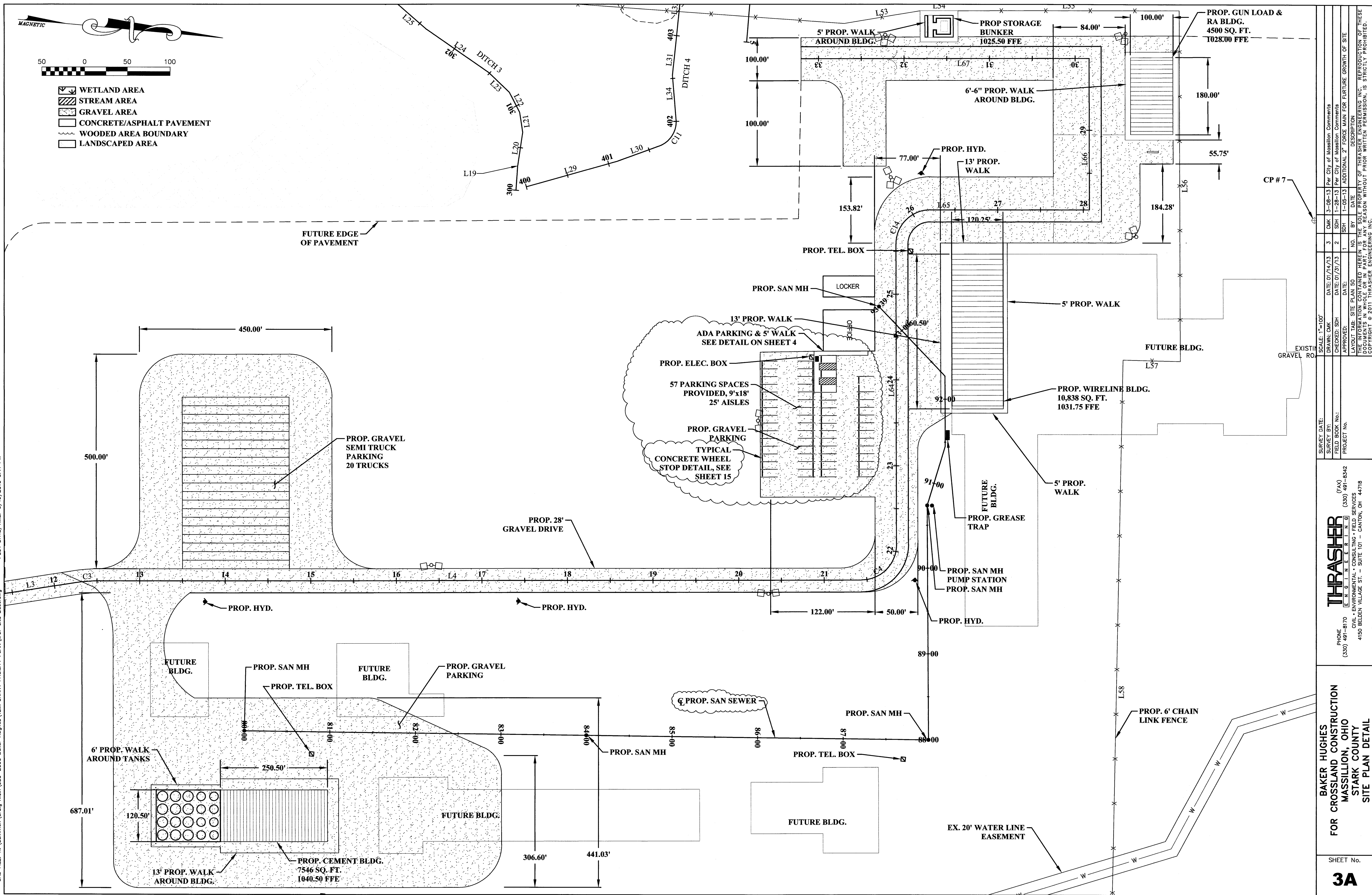
DATE: 01/14/13

2

OK

3-08-13

Per City of Massillon Comments



BAKER HUGHES
FOR CROSSLAND CONSTRUCTION
MASSILLION, OHIO
STARK COUNTY
SITE PLAN DETAIL

THRASHER
E N G I N E E R I N G

PHONE (330) 491-8170 (330) 491-8342 (Fax)

CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES
 4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718

SHEET No. **3A**

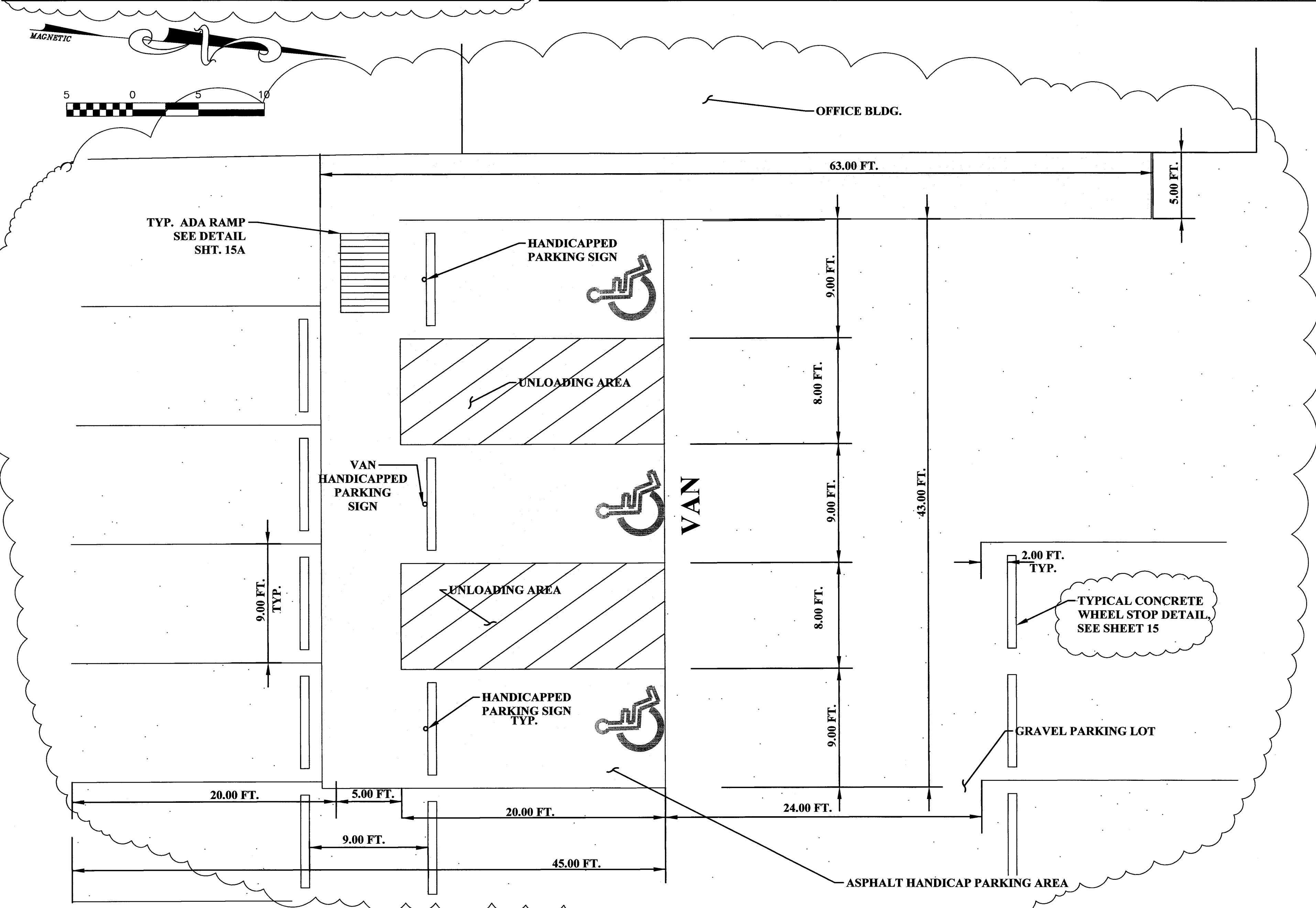
SURVEY DATE:	SCALE: 1"=100'	DATE: 01/14/13	CHK: 3	Per City of Massillon Comments
SURVEY BY:	DRAWN: CMK	DATE: 07/31/13	2	SPH 1--28--13 Per City of Massillon Comments
FIELD BOOK No.:	CHECKED: SM	DATE: 07/31/13	1	ADDITIONAL 2" FORCE MAIN FOR FUTURE GROWTH OF SITE
PROJECT No.	APPROVED: DATE:	LAYOUT DATE:	SITE PLAN NO.	BY DATE DESCRIPTION

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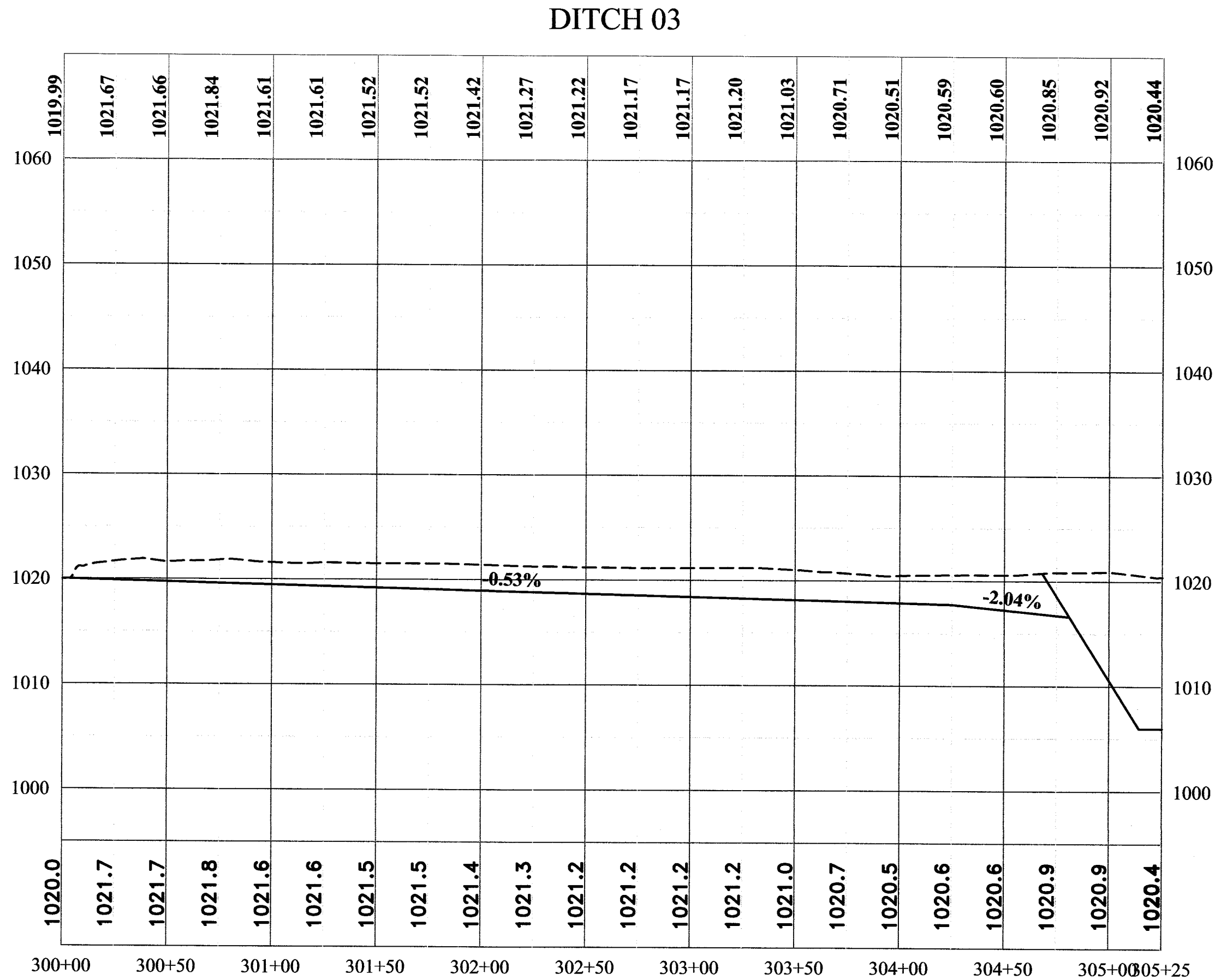
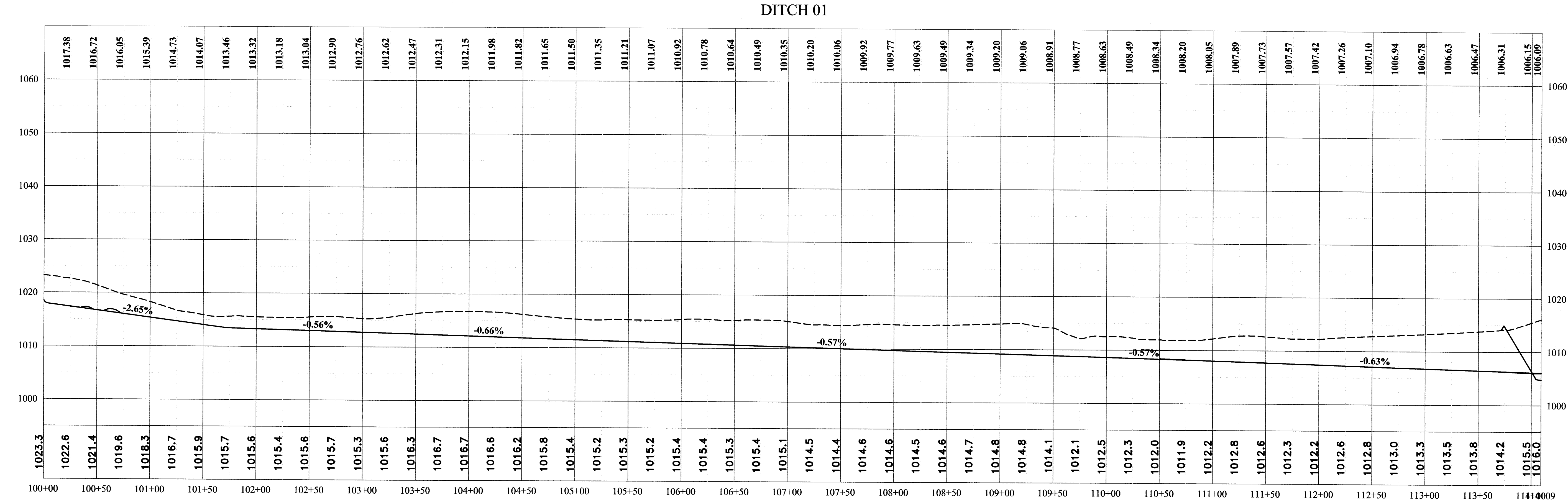
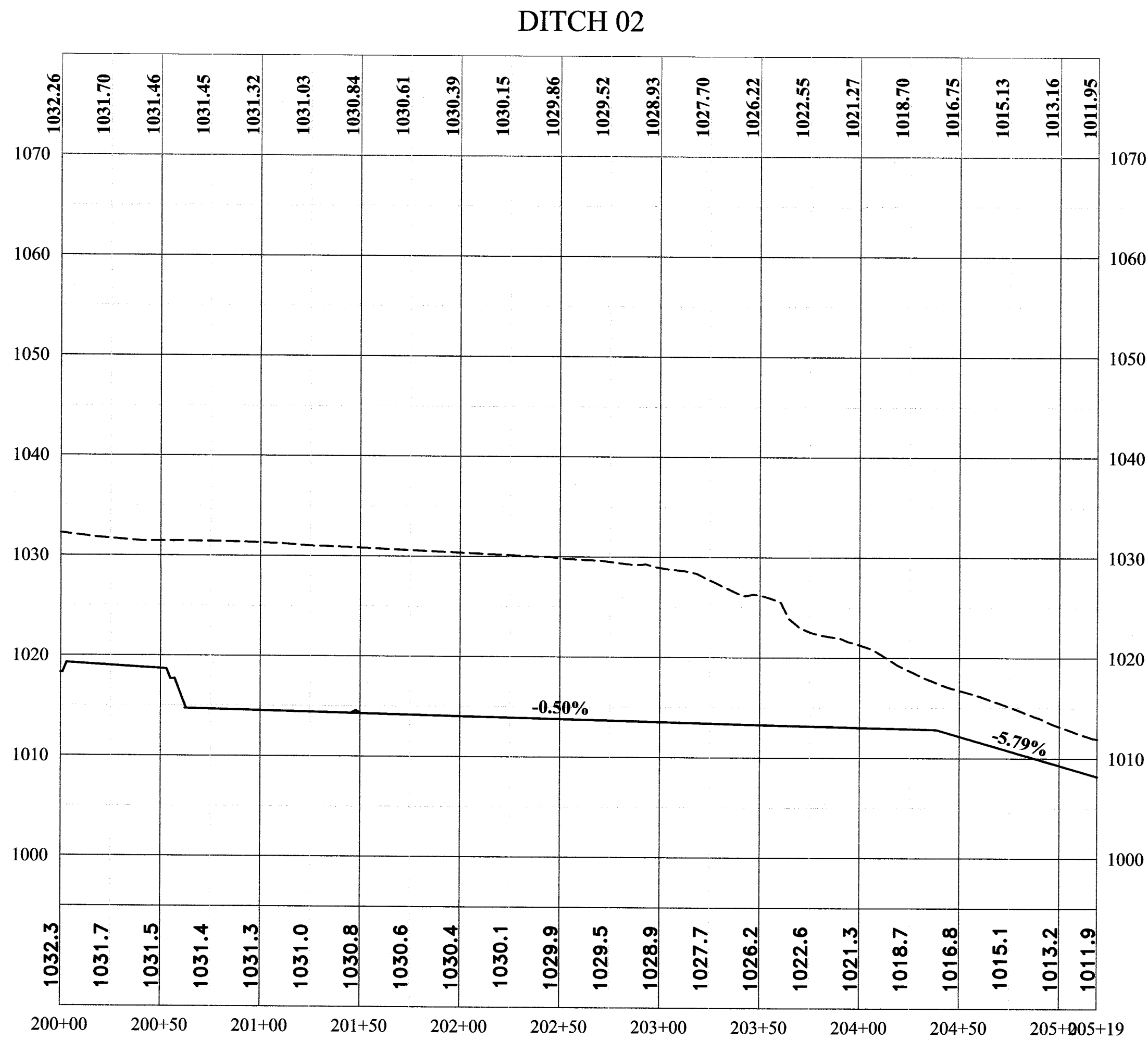
ALIGNMENT TANGENT TABLE				
Line #	Length	Direction	Start Point	End Point
L1	78.540	N81° 07' 13.92"W	(2245089.8948,397626.6005)	(2245012.2966,397638.7236)
L2	716.003	N15° 41' 57.70"E	(2244918.4019,397784.9201)	(2245112.1450,398474.2126)
L3	79.488	N13° 45' 42.47"W	(2245114.7100,398625.8960)	(2245095.8009,398703.1024)
L4	889.702	N05° 07' 11.89"W	(2245090.8575,398732.8313)	(2245011.4592,399618.9830)
L6	30.656	S06° 45' 25.93"W	(2245012.3878,397611.2753)	(2245008.7807,397580.8322)
L7	141.923	N87° 55' 33.75"W	(2244977.9034,397554.3817)	(2244836.0730,397559.5178)
L8	289.219	N33° 18' 01.55"W	(2244812.0846,397573.0273)	(2244653.2949,397814.7575)
L9	91.333	N50° 31' 11.62"W	(2244653.2949,397814.7575)	(2244582.8000,397872.8280)
L10	77.097	N02° 50' 35.70"E	(2244571.9112,397897.4714)	(2244575.7355,397974.4736)
L11	210.570	N07° 39' 31.26"W	(2244575.7355,397974.4736)	(2244547.6726,398183.1649)
L12	176.801	N13° 41' 34.54"E	(2244547.6726,398183.1649)	(2244589.5246,398354.9411)
L13	71.780	N63° 15' 53.54"W	(2244573.8733,398388.8356)	(2244509.7668,398321.1270)
L14	178.234	N66° 48' 27.70"W	(2244509.7668,398421.1270)	(2244345.9366,398491.3187)
L15	56.342	N72° 23' 53.24"W	(2245039.0481,398110.5517)	(2244985.3439,398127.5897)
L16	17.136	N25° 38' 24.18"W	(2244586.5680,398296.9240)	(2244579.1531,398312.3724)
L17	84.452	N42° 20' 18.77"W	(2244985.3439,398127.5897)	(2244928.4644,398190.0150)
L18	335.566	N74° 15' 45.45"W	(2244928.4644,398190.0150)	(2244605.4771,398281.0300)
L19	28.879	S89° 16' 35.55"W	(2244594.6624,399177.1056)	(2244565.7858,399176.7409)
L20	38.840	N86° 23' 24.62"W	(2244565.7858,399176.7409)	(2244527.0226,399179.1864)
L21	23.948	S76° 12' 43.80"W	(2244527.0226,399179.1864)	(2244503.7646,399173.4789)
L22	26.033	S57° 49' 10.91"W	(2244503.7646,399173.4789)	(2244481.7312,399159.6143)
L23	33.376	S38° 34' 12.62"W	(2244481.7312,399159.6143)	(2244460.9223,399133.5196)
L24	88.773	S29° 45' 43.26"W	(2244460.9223,399133.5196)	(2244416.8555,399056.4562)
L25	63.239	S36° 07' 01.83"W	(2244416.8555,399056.4562)	(2244379.5798,399005.3706)
L26	89.679	S27° 15' 42.95"W	(2244379.5798,399005.3706)	(2244338.5017,398925.6534)
L27	62.718	S16° 41' 41.34"W	(2244338.5017,398925.6534)	(2244320.4843,398865.5786)
L28	69.961	S01° 05' 17.44"E	(2244320.4843,398865.5786)	(2244321.8130,398795.6305)
L29	110.478	N20° 42' 32.30"W	(2244589.5670,399188.7993)	(2244550.4997,399292.1399)
L30	52.210	N24° 57' 13.13"W	(2244550.4997,399292.1390)	(2244528.4732,399339.4749)
L31	64.063	N88° 53' 57.99"W	(2244444.8418,399347.6706)	(2244380.7906,399348.9011)
L32	26.645	N88° 50' 53.73"W	(2244380.7906,399348.9011)	(2244354.1507,399349.4367)
L33	21.515	N01° 16' 14.93"W	(2244324.7611,399378.7653)	(2244324.2839,399400.2753)
L34	52.148	S80° 22' 06.82"W	(2244496.2544,399356.3955)	(2244444.8418,399347.6706)
L35	56.772	S38° 36' 48.29"W	(2244333.1022,400154.2322)	(2244297.6729,400109.8719)
L36	57.223	S71° 34' 38.16"W	(2244297.6729,400109.8719)	(2244243.3824,400091.7879)
L37	60.055	S40° 13' 15.72"W	(2244243.3824,400091.7879)	(2244204.6028,400045.9325)
L38	60.820	S30° 40' 03.99"W	(2244204.6028,400045.9325)	(2244173.5812,399993.6193)
L39	48.229	S14° 01' 23.16"W	(2244173.5812,399993.6193)	(2244161.8947,399946.8277)
L40	60.064	S00° 00' 00.00"E	(2244161.8947,399946.8277)	(2244161.8947,399886.7641)
L41	55.748	S10° 00' 54.32"W	(2244161.8947,399886.7641)	(2244152.1998,399831.8660)
L42	24.788	S16° 37' 32.99"W	(2244152.1998,399831.8660)	(2244145.

Line #	Length	Direction	Start Point	End Point
L57	67.029	S03° 37' 21.07"E	(2244724.7892,399968.0883)	(2244729.0243,399901.1928)
L58	774.579	N86° 08' 37.46"E	(2244729.0243,399901.1928)	(2245501.8500,399953.2860)
L59	1101.827	S05° 14' 59.81"E	(2245501.8500,399953.2860)	(2245602.6680,398856.0813)
L60	0.126	S05° 14' 29.35"E	(2245602.6680,398856.0813)	(2245602.6795,398855.9558)
L61	220.647	S46° 50' 24.66"W	(2245315.9028,398100.9851)	(2245154.9524,397950.0549)
L62	0.047	S09° 48' 20.66"W	(2245017.4595,397694.9478)	(2245017.4515,397694.9015)
L63	25.792	N67° 56' 03.20"W	(2245017.4515,397694.9015)	(2244993.5488,397704.5907)
L64	349.947	S84° 52' 48.00"W	(2244966.8914,399656.2211)	(2244618.3405,399624.9911)
L65	186.355	N05° 07' 13.73"W	(2244574.9304,399661.2615)	(2244558.2982,399846.8731)
L66	176.333	S84° 52' 47.67"W	(2244558.2982,399846.8731)	(2244382.6686,399831.1365)
L67	336.860	S05° 07' 12.25"E	(2244382.6686,399831.1365)	(2244412.7311,399495.6203)
L69	294.668	N37° 13' 29.85"W	(2244795.6609,397714.6336)	(2244617.4024,397949.2682)
L70	395.673	N22° 52' 26.66"W	(2244636.3912,398310.6795)	(2244482.5904,398675.2371)
L71	141.952	N06° 04' 54.70"E	(2244482.5904,398675.2371)	(2244497.6301,398816.3897)

ALIGNMENT CURVE TABLE											
Curve #	P.I. STA.	Delta Angle	Dc	Radius	T	Length	E	Chord	Chord Direction	Start Point	End Point
C1	2+09.42	096°49'12"	049°19'33"	116.16	130.88	196.29	58.83	173.75	N32° 42' 38.11"W	(2245012.2966,397638.7236)	(2244918.4019,397784.9201)
C2	10+69.26	029°27'40"	019°12'24"	298.31	78.43	153.39	10.14	151.71	N00° 58' 07.62"E	(2245112.1450,398474.2126)	(2245114.7100,398625.8960)
C3	12+38.82	008°38'31"	028°38'52"	200.00	15.11	30.17	0.57	30.14	N09° 26' 27.18"W	(2245095.8009,398703.1024)	(2245090.8575,398732.8313)
C4	21+84.64	090°00'00"	139°31'07"	41.07	41.07	64.51	17.01	58.08	N50° 07' 11.95"W	(2245011.4592,399618.9830)	(2244966.8914,399656.2211)
C5	111+42.66	076°57'28"	190°59'09"	30.00	23.85	40.30	8.32	37.33	N24° 47' 09.50"W	(2244589.5246,398354.9411)	(2244573.8733,398388.8356)
C6	106+41.48	053°21'47"	190°59'09"	30.00	15.08	27.94	3.58	26.94	N23° 50' 17.96"W	(2244582.8000,397872.8280)	(2244571.9112,397897.4714)
C7	100+58.30	085°19'00"	190°59'09"	30.00	27.64	44.67	10.79	40.66	S49° 24' 56.09"W	(2245008.7807,397580.8322)	(2244977.9034,397554.3817)
C8	102+32.74	054°37'32"	190°59'09"	30.00	15.49	28.60	3.76	27.53	N60° 36' 47.65"W	(2244836.0730,397559.5178)	(2244812.0846,397573.0273)
C9	204+89.91	048°37'21"	190°59'09"	30.00	13.55	25.46	2.92	24.70	N49° 57' 04.81"W	(2244605.4771,398281.0300)	(2244586.5680,398296.9240)
C10	403+73.40	087°34'39"	190°59'09"	30.00	28.76	45.86	11.56	41.52	N45° 03' 34.33"W	(2244354.1507,399349.4367)	(2244324.7611,399378.7653)
C11	401+85.57	074°40'40"	190°59'09"	30.00	22.89	39.10	7.73	36.39	N62° 17' 33.15"W	(2244528.4732,399339.4749)	(2244496.2544,399356.3955)
C12	53+77.82	052°04'54"	006°13'45"	919.80	449.43	836.09	103.93	807.60	S20° 47' 57.66"W	(2245602.6795,398855.9558)	(2245315.9028,398100.9851)
C13	61+37.94	037°02'04"	012°33'29"	456.25	152.81	294.91	24.91	289.80	S28° 19' 22.66"W	(2245154.9524,397950.0549)	(2245017.4595,397694.9478)
C14	25+98.03	089°59'58"	143°14'22"	40.00	40.00	62.83	16.57	56.57	N50° 07' 12.87"W	(2244618.3405,399624.9911)	(2244574.9304,399661.2615)



<p>BAKER HUGHES FOR CROSSLAND CONSTRUCTION MASSILLON, OHIO STARK COUNTY LAYOUT AND DETAIL PLAN</p>	<p>THRASHER ENGINEERING PHONE (330) 491-8170 (330) 491-8542 (FAX) CIVIL, ENVIRONMENTAL, CONSULTING, FIELD SERVICES 4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718 THE INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF THRASHER ENGINEERING INC. REPRODUCTION OF THESE DRAWINGS WITHOUT WRITTEN PERMISSION, IS STRICTLY PROHIBITED. COPYRIGHT © 2011 THRASHER ENGINEERING INC.</p>									
	<p>SCALE: 1"=100'</p>									
	<p>SURVEY DATE: _____</p>									
	<p>SURVEY BY: _____</p>									
	<p>FIELD BOOK No.: _____</p>									
	<p>PROJECT No. _____</p>									
	<p>CHECKED: SDH DATE: 01/25/13 3 QWK 3-08-13 Per City of Massillon Comments</p>									
	<p>APPROVED: _____ DATE: 01/25/13 2 SDH 1-28-13 Per City of Massillon Comments</p>									
	<p>LAYOUT TAB: LAYOUT DATA NO. BY DATE DESCRIPTION</p>									
	<p>1 SDH 1-05-13 ADDITIONAL 2" FORCE MAIN FOR FUTURE GROWTH OF SITE</p>									



BAKER HUGHES
FOR CROSSLAND CONSTRUCTION
MASSILLION, OHIO
STARK COUNTY
DITCH DETAILS

SHEET No.
5A

THRASHER
ENGINEERING INC.

PHONE
(330) 481-8170

(FAX)
(330) 481-8342

CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES
4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718

SURVEY DATE:
DRAWN BY:
CHECKED: SDH
APPROVED:
LAYOUT TAB: DITCH DETAILS
NO. BY DATE
NO. BY DATE
NO. BY DATE

DATE: 01/14/13
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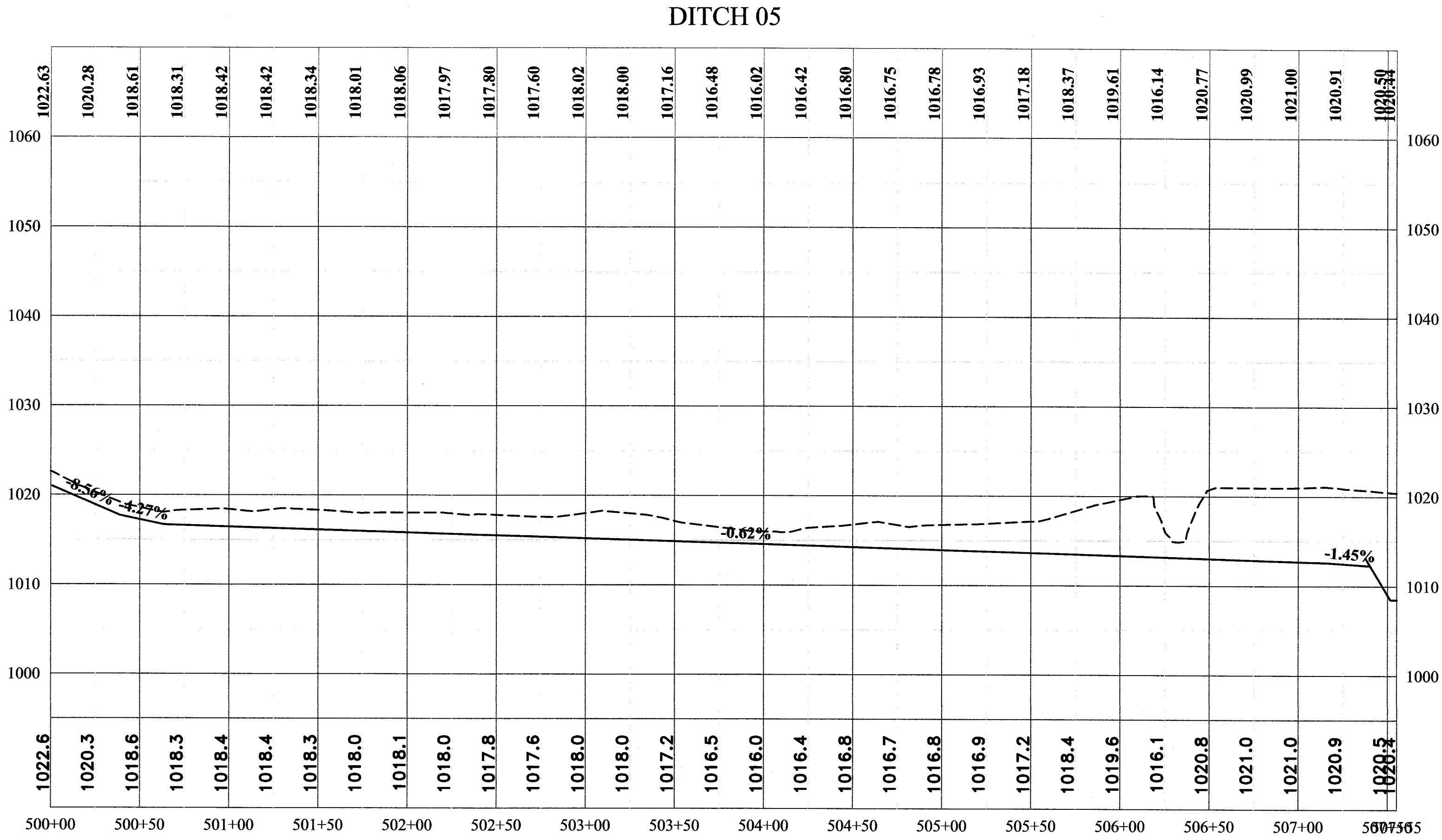
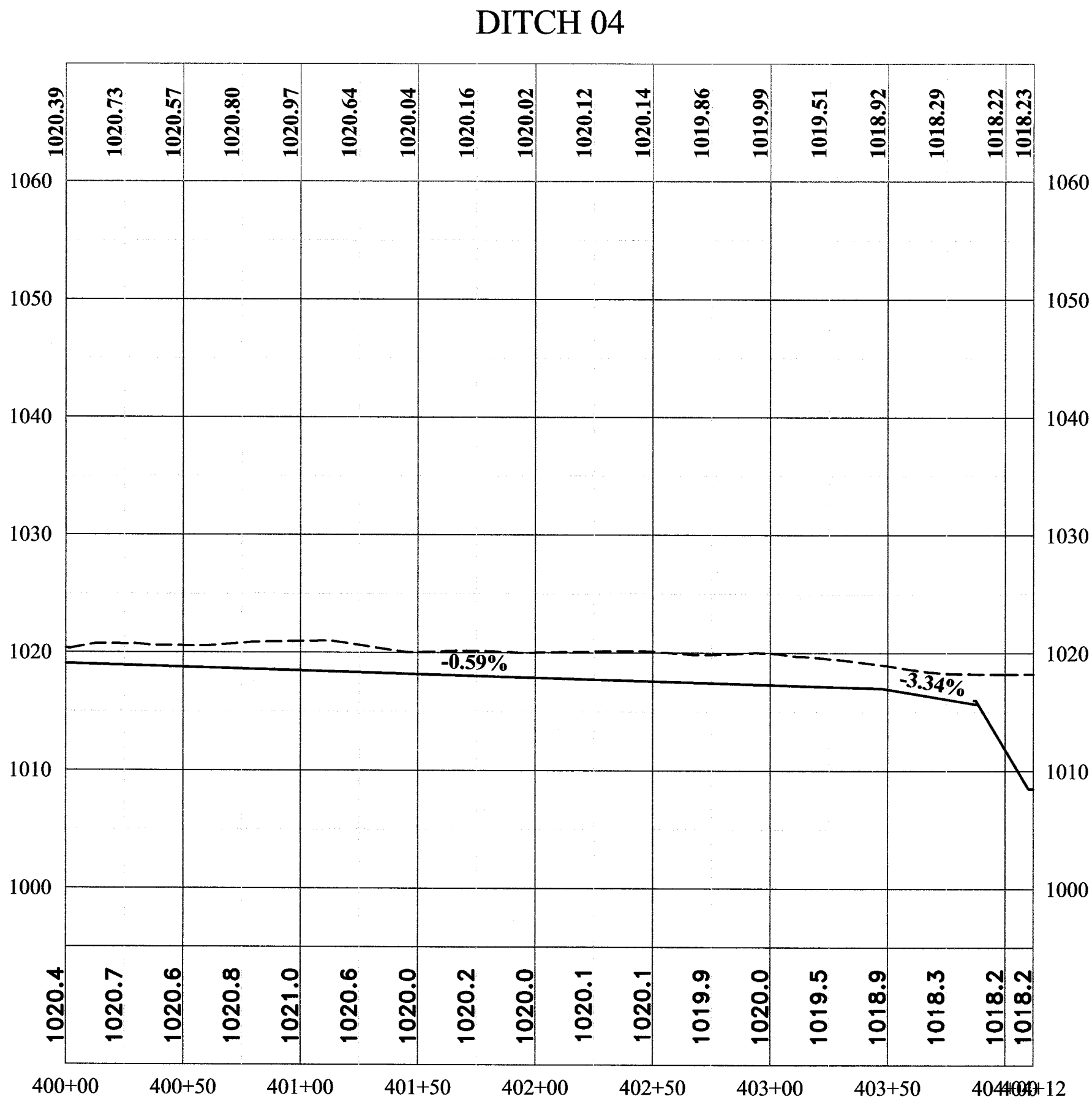
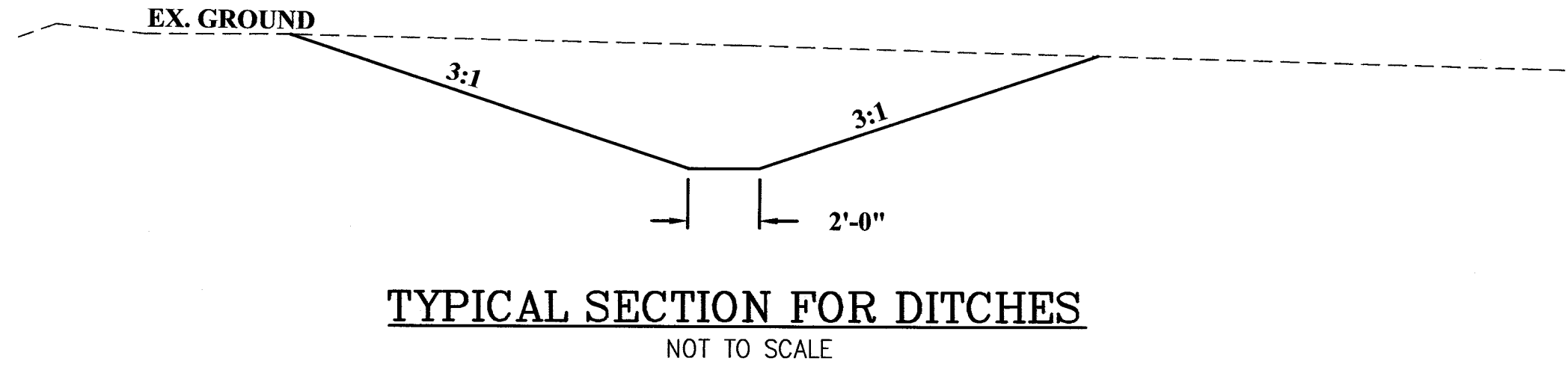
CMK
SDH
SDH

3-08-13
1-28-13
1-05-13

Per City of Massillon Comments
Per City of Massillon Comments
ADDITIONAL 2" FORCE MAIN FOR FUTURE GROWTH OF SITE

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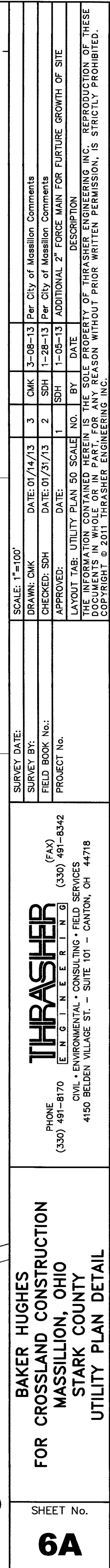


BAKER HUGHES
FOR CROSSLAND CONSTRUCTION
MASSILLION, OHIO
STARK COUNTY
DITCH DETAILS








SHEET No.
5B

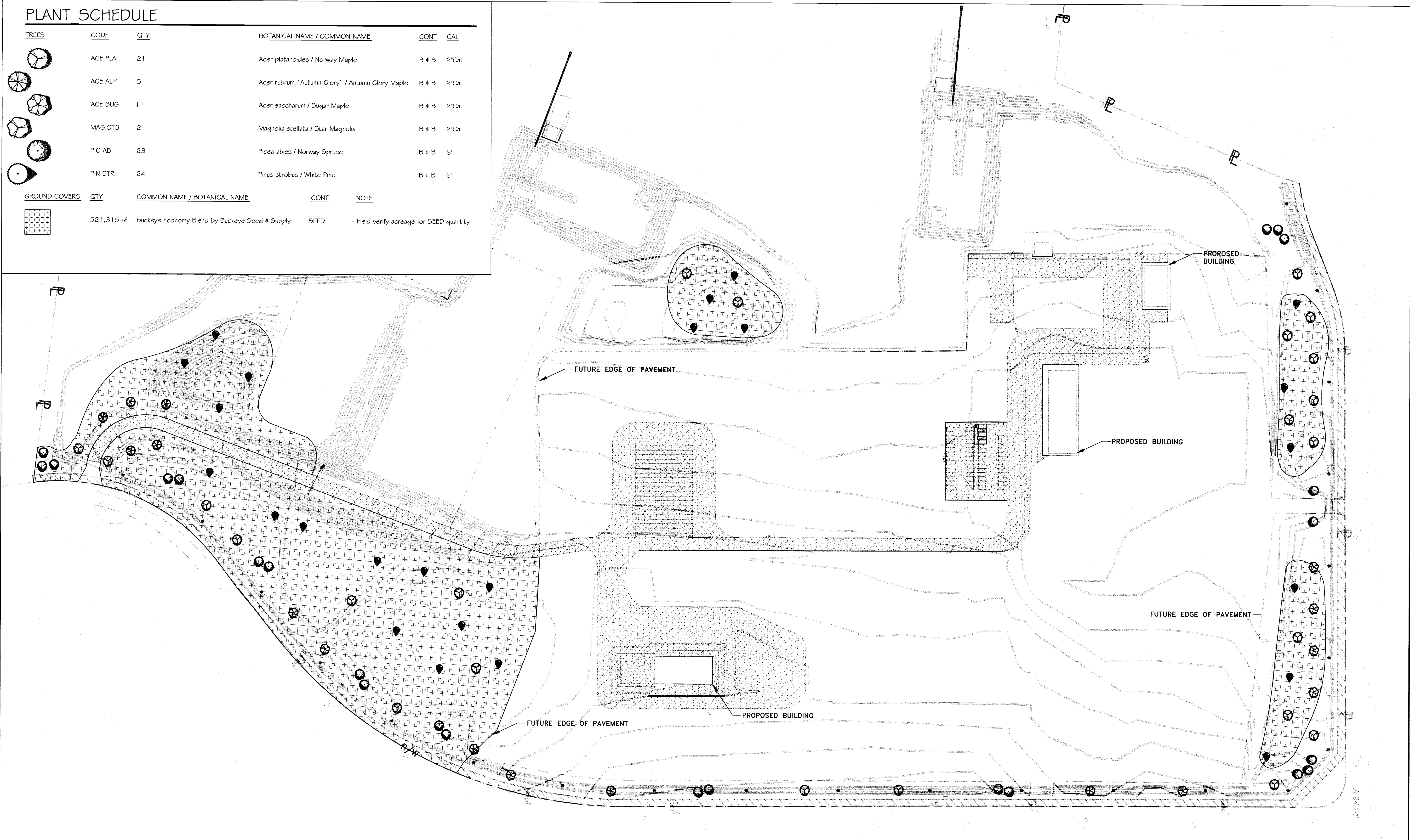
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(330) 491-8342 (FAX)

SURVEY DATE:	SCALE: 1"=100'	DATE: 01/14/13	3	CHK	3-08-13	Per City of Massillon Comments
SURVEY BY:	DRAWN: CMK	DATE: 07/17/13	2	SDH	1-28-13	Per City of Massillon Comments
FIELD BOOK No.:	CHECKED: SH	DATE: 07/17/13	1	SDH	1-05-13	ADDITIONAL 2' FORCE MAIN FOR FUTURE GROWTH OF SITE
PROJECT No.:	APPROVED:	DATE:	NO.	BY:	DATE:	DESCRIPTION OF THIS DRAWING
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PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	CAL
	ACE PLA	21	Acer platanoides / Norway Maple	B & B	2"Cal
	ACE AU4	5	Acer rubrum 'Autumn Glory' / Autumn Glory Maple	B & B	2"Cal
	ACE SUG	11	Acer saccharum / Sugar Maple	B & B	2"Cal
	MAG ST3	2	Magnolia stellata / Star Magnolia	B & B	2"Cal
	PIC ABI	23	Picea abies / Norway Spruce	B & B	6'
	PIN STR	24	Pinus strobus / White Pine	B & B	6'
GROUND COVERS	QTY	COMMON NAME / BOTANICAL NAME	CONT	NOTE	
	521,315 sf	Buckeye Economy Blend by Buckeye Seed & Supply	SEED	- Field verify acreage for SEED quantity	

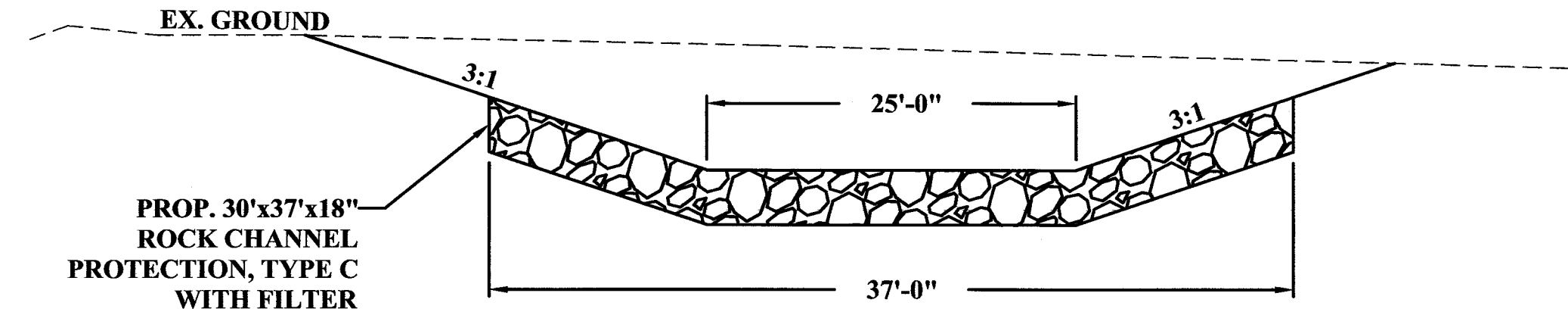


BAKER HUGHES
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MASSILLION, OHIO
STARK COUNTY
LANDSCAPE PLAN

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(FAX) (304) 824-7831
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30 COLUMBIA BOULEVARD - CLARKSBURG, WV 26301
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SHEET No.
6B

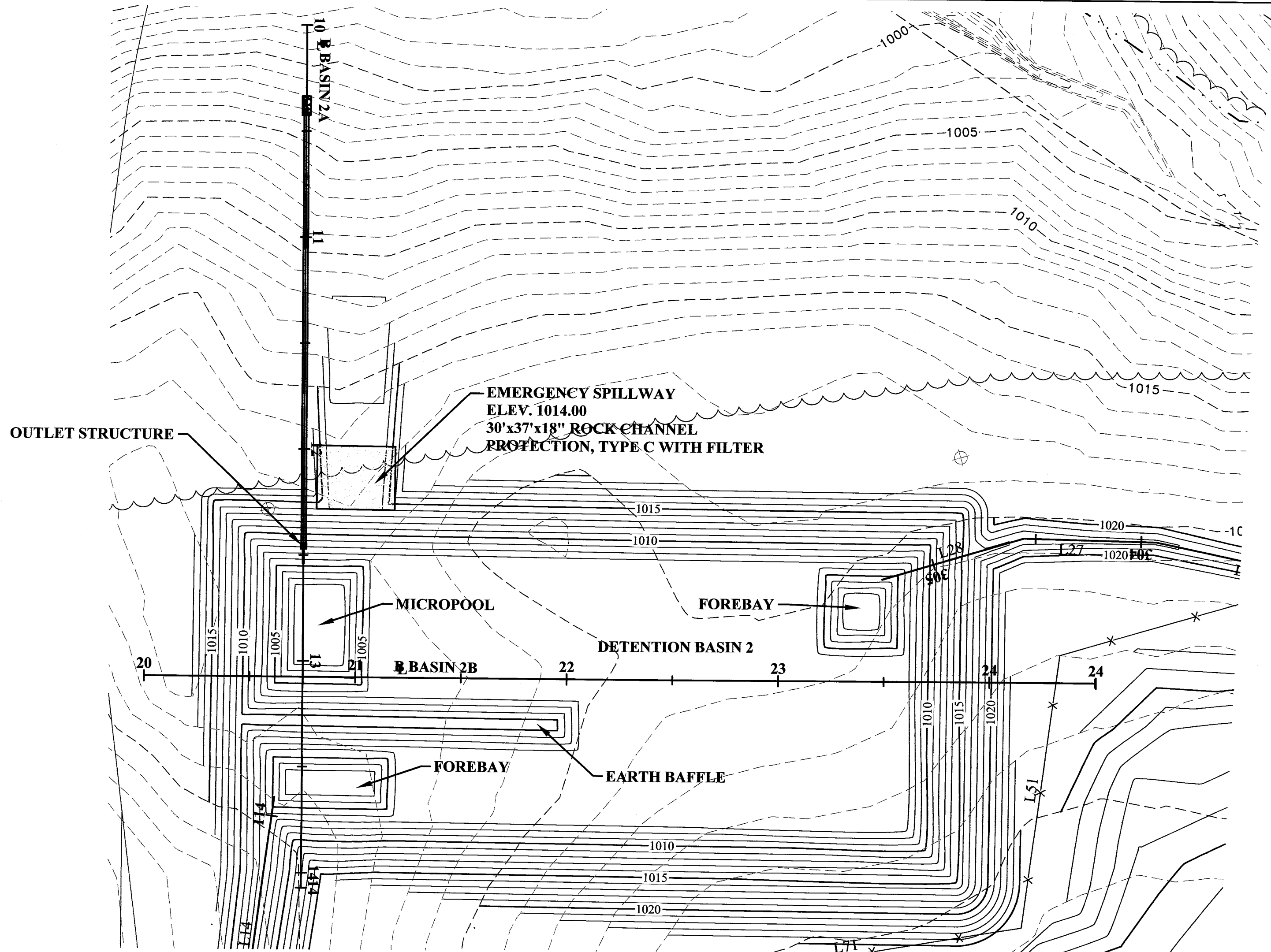
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PROJECT No.:	APPROVED: DATE:		
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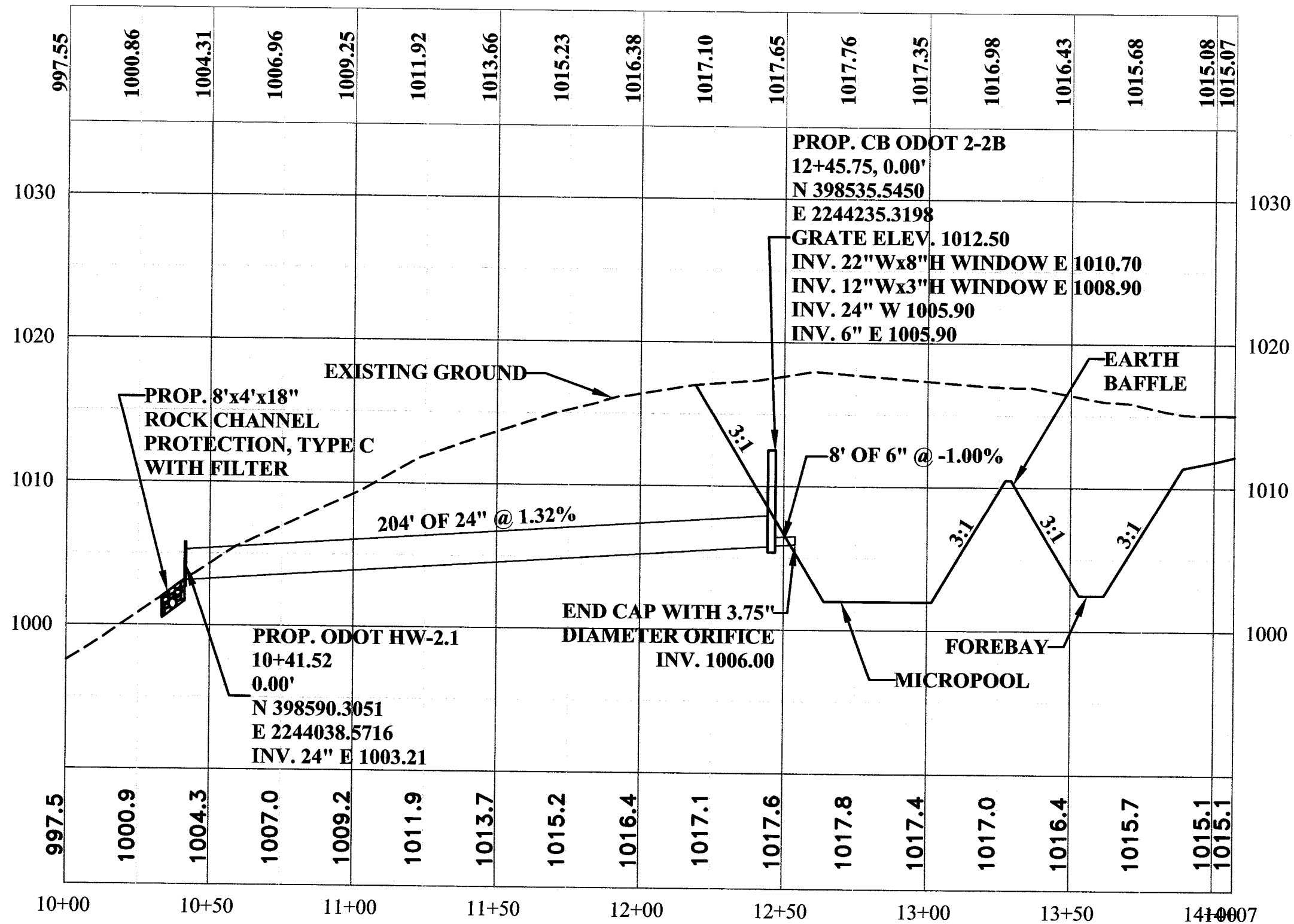
WETLAND AREA
STREAM AREA
GRAVEL AREA
CONCRETE/ASPHALT PAVEMENT
WOODED AREA BOUNDARY
LANDSCAPED AREA

SHEET No.	BAKER HUGHES FOR CROSSLAND CONSTRUCTION MASSILLON, OHIO STARK COUNTY BASIN DETAILS	 <p>PHONE (330) 491-8170 (FAX) (330) 491-8342 CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES 4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718</p>
SURVEY DATE: _____ SCALE: 1"=100' SURVEY BY: DRAWN: CMK FIELD BOOK NO.: CHECKED: SDH DATE: 07/14/13 3 OMK 3-09-13 Per City of Massillon Comments PROJECT No. APPROVED: SDH DATE: 07/25/13 2 SDH 1-29-13 Per City of Massillon Comments LAYOUT TAB: BASIN DETAILS 1 NO. DATE 1-09-13 ADDITIONAL 2" FORCE MAIN FOR FUTURE GROWTH OF SITE THE INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF THRASHER ENGINEERING INC. REPRODUCTION OF THESE DRAWINGS WITHOUT WRITTEN PERMISSION, IS STRICTLY PROHIBITED. COPYRIGHT © 2011 THRASHER ENGINEERING INC.		

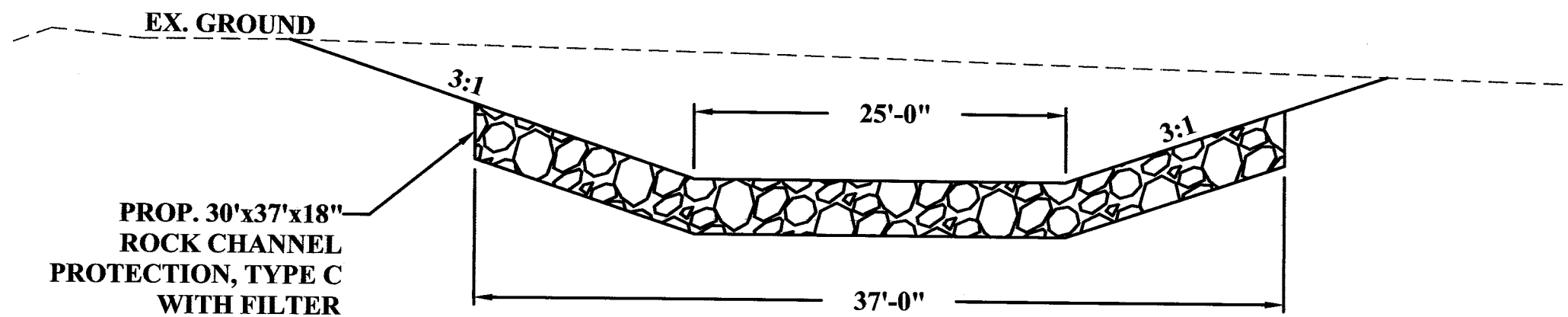
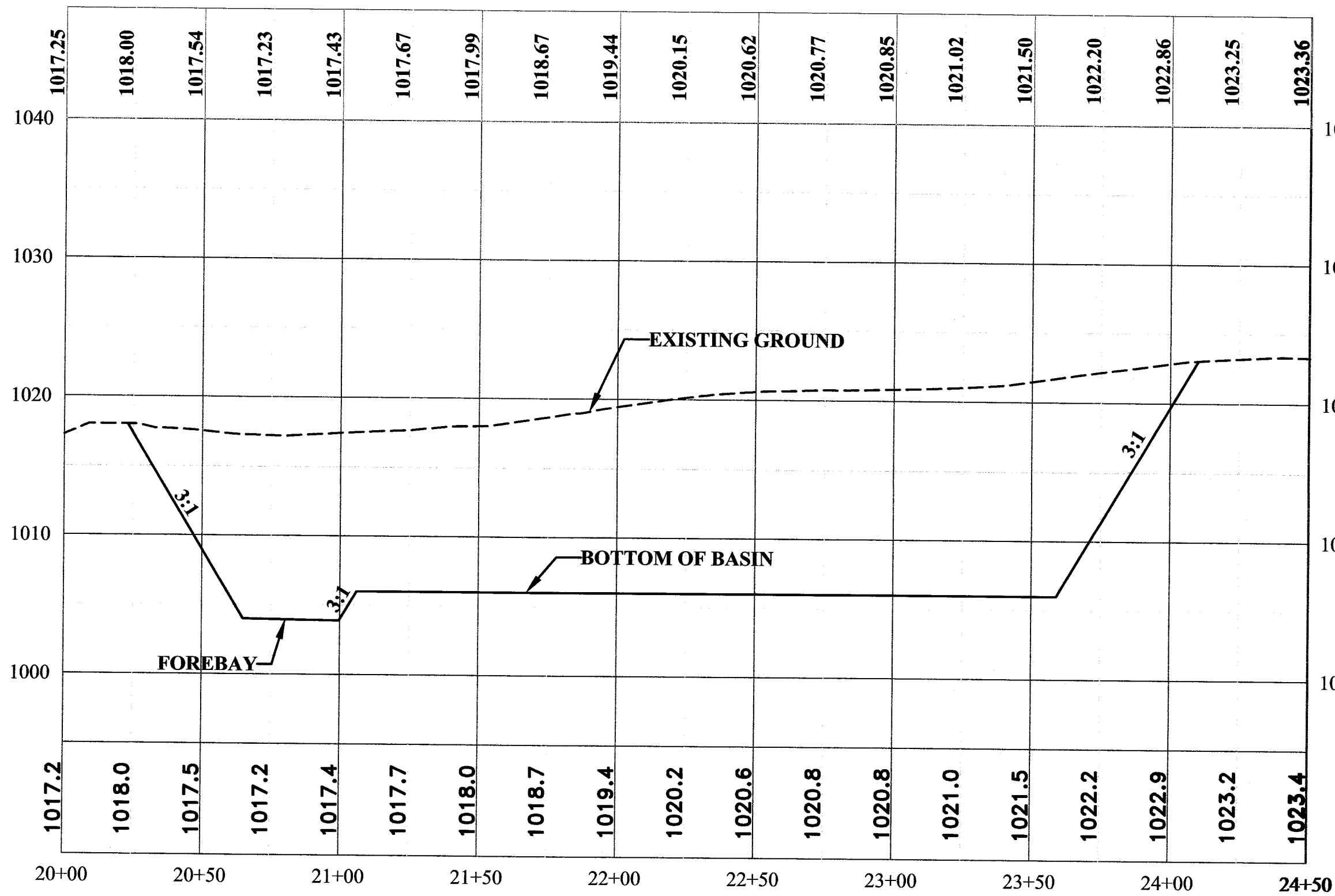


DETENTION BASIN 2 PLAN

BASIN 2A

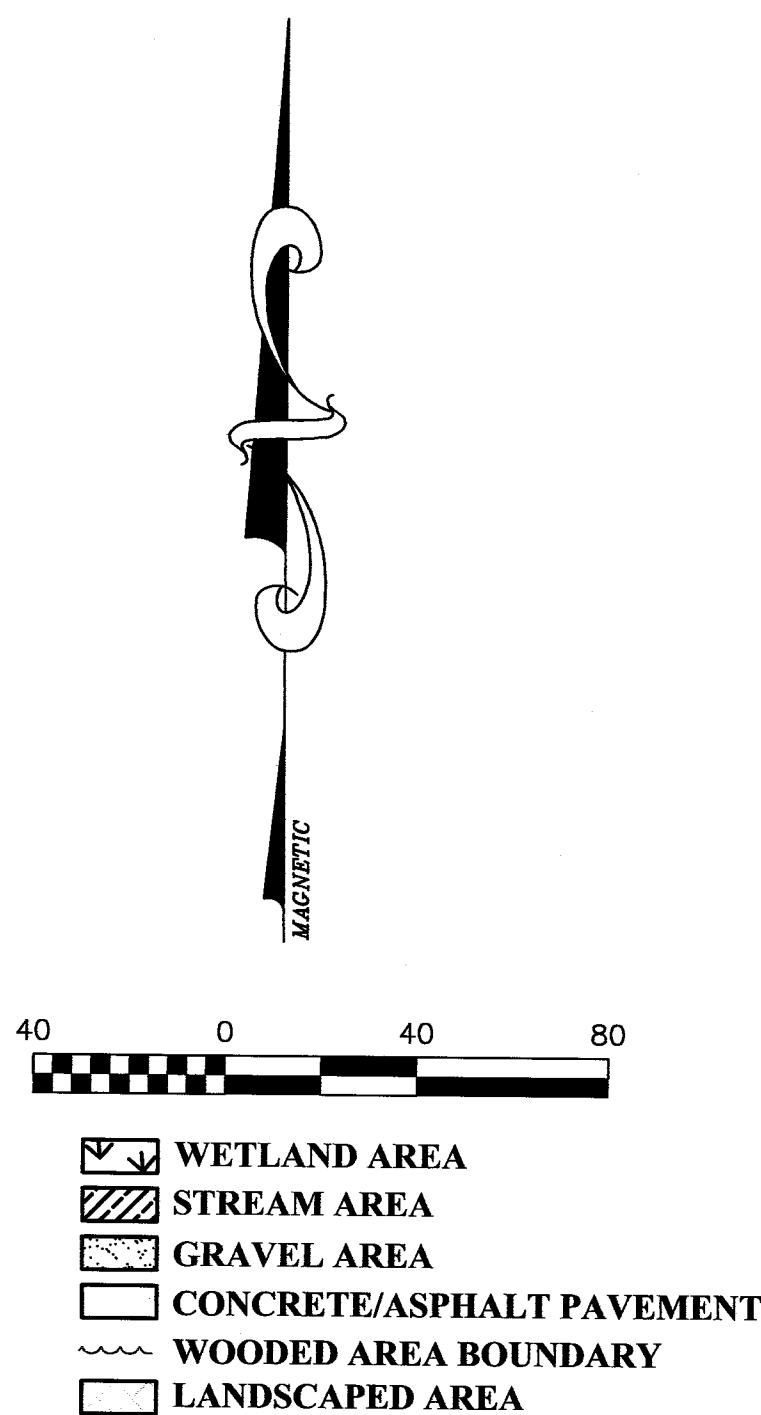


BASIN 2B

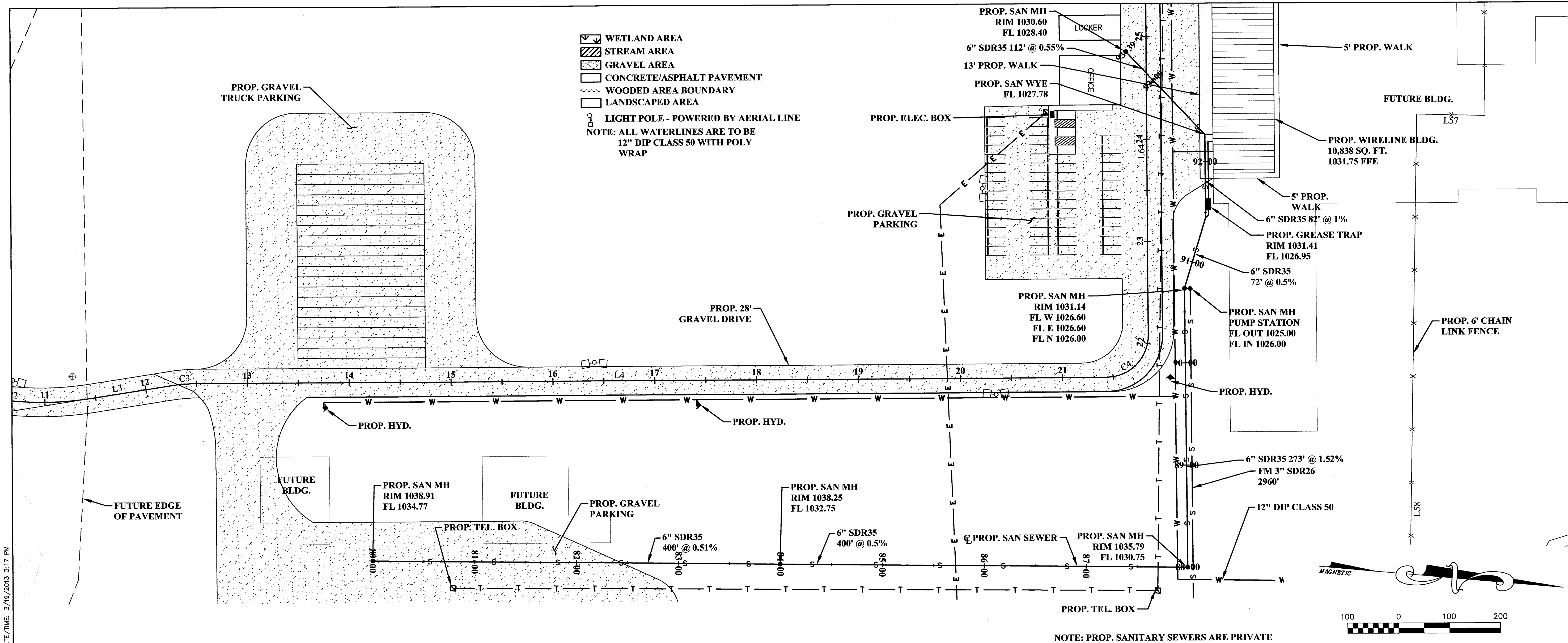


TYPICAL SECTION FOR SPILLWAY

NOT TO SCALE



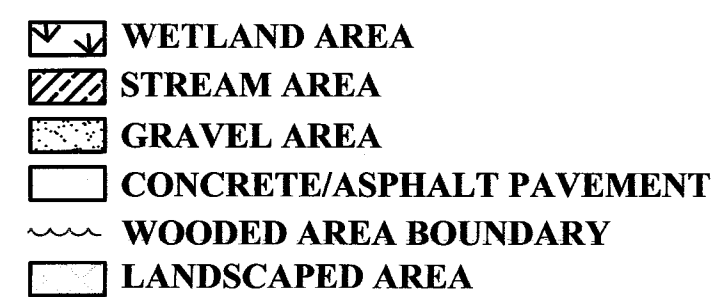
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SURVEY BY:		DRAWN: CMK	DATE: 01/31/13	2	SDH	1-28-13	Per City of Massillon Comments
FIELD BOOK No.:		CHECKED: SDH	DATE:	1	SDH	1-05-13	ADDITIONAL 2" FORCE MAIN FOR FUTURE GROWTH OF SITE
PROJECT No.:		APPROVED:	DATE:	1	SDH	1-05-13	ADDITIONAL 2" FORCE MAIN FOR FUTURE GROWTH OF SITE
		LAYOUT TAB: BASIN DETAILS 2	NO. BY	1	SDH	1-05-13	ADDITIONAL 2" FORCE MAIN FOR FUTURE GROWTH OF SITE
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SHEET No.		6D					












BAKER HUGHES
FOR CROSSLAND CONSTRUCTION
MASSILLION, OHIO
STARK COUNTY
SWPPP

SHEET No. 7	THRASHER E N G I N E E R I N G PHONE (330) 491-8170 (FAX) (330) 491-8342 CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES 4150 BELDEN VILLAGE ST. — SUITE 101 — CANTON, OH 44718
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<u>LEGEND</u>	
	PROPOSED SILT FENCING
	PRO TEMP. DIVERSION/INTERCEPTOR
	PROPOSED CONTOUR
	PROPOSED LIMIT OF DISTURBANCE (75 AC)
	CONTRIBUTING DRAINAGE AREA
	STABILIZED CONSTRUCTION ENTRANCE
	ROCK CHECK DAM

An aerial photograph of a wetland area, likely a marsh or swamp. The terrain is characterized by numerous small, irregular water bodies and vegetated areas. Contour lines are visible, indicating elevation changes. A small, light-colored building or structure is located in the lower-left corner. The image is oriented horizontally, with the building at the bottom left and the top of the frame showing a road or boundary line. The overall appearance is dark and textured, typical of a high-contrast aerial photograph.

Stark County, Ohio (OH151)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CdB	Canfield silt loam, 2 to 6 percent slopes	160.1	64.8%
CdC	Canfield silt loam, 6 to 12 percent slopes	4.8	1.9%
CdC2	Canfield silt loam, 6 to 12 percent slopes, moderately eroded	27.9	11.3%
Ch	Carlisle muck	1.5	0.6%
FcA	Fitchville silt loam, 0 to 2 percent slopes	4.1	1.7%
Ly	Luray silt loam	16.2	6.6%
ReA	Ravenna silt loam, 0 to 2 percent slopes	3.3	1.3%
ReB	Ravenna silt loam, 2 to 6 percent slopes	2.6	1.1%
SI	Sloan silt loam	15.2	6.2%
WuB	Wooster silt loam, 2 to 6 percent slopes	3.3	1.3%
WuC2	Wooster silt loam, 6 to 12 percent slopes, moderately eroded	4.1	1.7%
WuD2	Wooster silt loam, 12 to 18 percent slopes, moderately eroded	3.7	1.5%
Totals for Area of Interest		246.9	100.0%

SEE SHEET 12 FOR BASIN NOTES AND DETAILS, INCLUDING THE LOCATION OF ELEV. A, B, AND C. ORIFICE IS TO BE INSTALLED IN THE END CAP OF THE SKIMMER DEWATERING DEVICE. A TRASH RACK IS TO BE PLACED ON TOP OF THE OUTLET STRUCTURE. THE TOP OF THE OUTLET STRUCTURE IS TO BE RAISED TO BE ABOVE ELEVATION C.

8

PROJECT INFORMATION:

CONTACT PERSON: DJ MCLENNY, CROSSLAND CONSTRUCTION (405-615-8470)

THIS PHASE ENCOMPASSES THE GRADING OF APPROXIMATELY 80 ACERS OF THE 110 ACRE SITE. THE BULK OF THE GRADING IS BEING PERFORMED FOR THE FUTURE PHASE. DURING THIS PHASE OF THE CONSTRUCTION THE MAIN EXTENSION OF THE UTILITIES WILL BE INSTALLED TO SERVICE THE FULL BUILD OUT. ALSO THE DETENTION BASINS THAT WILL BE CONSTRUCTED AS PART OF THIS PHASE OF CONSTRUCTION ARE SIZED TO HANDLE THE PROPOSED SITE BUILD OUT.

DURING THIS PHASE OF CONSTRUCTION THE DIVERSION DITCHES ARE BEING INSTALLED TO COLLECT THE SURFACE RUN OFF AND DIRECT THE SURFACE RUNOFF IN TO THE TWO DETENTION BASINS.

A TEMPORARY DRIVEWAY IS BEING CONSTRUCTED DURING THIS PHASE OF THE CONSTRUCTION TO PROVIDE THE ACCESS TO THE PROPOSED BUILDINGS. THE DEVELOPER IS CONSTRUCTING THE ACCESS ROAD TO CONNECT WITH OUR PROPOSED DRIVEWAY. THE PROPOSED ACCESS ROAD IS NOT PART OF THIS PROJECT.

SOIL DESCRIPTION: TEMPORARY PLANT LOCATED IN C&B SOIL, BORING INDICATED 8" TO 12" OF TOPSOIL, SANDY LEAN CLAY WITH GRAVEL UP TO 15' (BROWN, HARD TO VERY STIFF) AND SANDY SILTY CLAY WITH GRAVEL FROM 15-20' (GRAY, HARD)

CONSTRUCTION SCHEDULE: BMPs and PERIMETER CONTROLS WILL BE CONSTRUCTED BEFORE SITEWORK STARTS. BMPs WILL BE COMPLETED WITHIN TWO WEEKS AND SITE GRADING WILL BE COMPLETE WITHIN THREE WEEKS. ONCE SITE IS PREPARED, THE SITE UTILITIES AND BUILDING CONSTRUCTION WILL BE STARTED.

EROSION & SEDIMENT CONTROL/ CONSTRUCTION SEQUENCE

- 1)

CONTRACTOR SHALL INSTALL ALL CLEAN WATER DIVERSION DITCHES AS SHOWN ON PLANS AND SHALL BE STABILIZED IMMEDIATELY WITH SEED/MULCH AND ROCK CHECK DAMS. (2 WEEKS)
- 2)

CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROLS AS SHOWN ON THE PLANS AND AS DIRECTED. ALL SILT FENCING IS TO BE INSTALLED PARALLEL TO THE CONTOURS. (2 WEEKS)
- 3)

INSTALL ALL SEDIMENT BASINS/TRAPS. (2 WEEKS)
- 4)

CONTRACTOR SHALL STRIP AND STOCK TOPSOIL FOR REDISTRIBUTION ON SITE AND REMOVE ALL MATERIAL NOT SUITABLE FOR FILL; i.e., BRUSH, LOGS, VEGETABLE MATTER, ETC. (2 WEEKS)
- 5)

CONTRACTOR SHALL EXCAVATE AND ROUGH GRADE SITE AND INSTALL UTILITIES. FILLS SHALL BE EXTENDED UP TO SEDIMENT TRAP WITH SLOPES NOT STEEPER THAN 2:1. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE IN ALL DIVERSION DITCHES, ASSURING RUNOFF HAS A CLEAR PATH TO SEDIMENT BASINS. (4 WEEKS)
- 6)

AFTER VEGETATION HAS ESTABLISHED, CONTRACTOR SHALL CONSTRUCT BERMS, DIVERSIONS, PIPE SLOPE DRAINS, AND ROCK CHECK DAMS ON TOP OF THE FILL SITES. (4 WEEKS)
- 7)

AFTER VEGETATION ESTABLISHED ON COMPLETED FILLS, CONTRACTOR SHALL CLEAN OUT SEDIMENT BASINS PRIOR TO FILLING IN OVER THEM. SEDIMENT MAY BE DISTRIBUTED WITHIN FILL MATERIAL. (2 WEEKS)
- 8)

TOPSOIL SHALL BE DISTRIBUTED ON THE REMAINDER OF THE SITE. (1 WEEK)
- 9)

EMBANKMENTS AND FILL SITES SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FILL. ALL DISTURBED AREAS SHALL BE DRESSED TO A NEAT AND FINISHED APPEARANCE AND STABILIZED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN AND SEEDING AND MULCHING SPECIFICATIONS. (1 WEEK)
- 10)

CONTRACTOR SHALL INSTALL STONE PER PLAN. (1 WEEKS)
- 11)

CONTRACTOR SHALL INSTALL PERMANENT STORM WATER MANAGEMENT CONTROLS AND DIRECT STABILIZED SITE RUNOFF TO THE NEW FACILITIES. (3 WEEKS)
- 12)

AFTER COMPLETE STABILIZATION OF THE DRAINAGE AREA, REMOVE EROSION AND SEDIMENT CONTROL FACILITIES AND DRESS AND STABILIZE AS REQUIRED. (2 WEEKS)
- 13.)

ALL E & S MEASURES SHALL BE IN ACCORDANCE WITH THE OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR) RAINWATER AND LAND DEVELOPMENT MANUAL AVAILABLE AT:
Http://www.dnr.state.oh.us/tobid/9186/default.aspx

EROSION & SEDIMENT CONTROL / MAINTENANCE AND INSPECTION

- 1)

CONTRACTOR SHALL CLEAN OUT SEDIMENT IN THE BASINS ONCE THE CLEAN OUT ELEVATION IS MET. SEDIMENT SHALL BE INCORPORATED INTO THE FILL WITHIN THE DISTURBED AREA.
- 2)

CONTRACTOR SHALL CLEAN OUT SEDIMENT BEHIND SILT FENCE ONCE IT IS 1/3 THE HEIGHT OF THE FENCE. THE SEDIMENT SHALL BE INCORPORATED INTO THE FILL WITHIN THE DISTURBED AREA.
- 3)

ALL E&S MEASURES SHALL BE INSPECTED, AT A MINIMUM, EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THEN 0.5 INCHES FOR A 24 HOUR PERIOD. ANY REQUIRED REPAIRS OR MAINTENANCE SHOULD BE MADE IMMEDIATELY.
- 4)

THE CONSTRUCTION OF THE GRADING SHALL BE ACCOMPLISHED WITHIN 30 DAYS.

EROSION/SEDIMENT CONTROL NOTES:

THE CONTRACTOR SHALL PREVENT AND CONTROL SOIL EROSION RESULTING FROM THE PROPOSED CLEARING. SEDIMENT CONTROL STRUCTURES/DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE OHIO DEPARTMENT OF NATURAL RESOURCES MANUAL RAINWATER AND LAND DEVELOPMENT — OHIO'S STANDARDS FOR STORMWATER MANAGEMENT, LAND DEVELOPMENT AND URBAN STREAM PROTECTION. SEDIMENT CONTROL DEVICES MUST BE INSTALLED PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUED INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL DEVICES. THE CONTRACTOR SHALL FOLLOW THE REQUIREMENTS SET FORTH ON THE APPROVED STORMWATER POLLUTION PREVENTION PLAN IF APPLICABLE, OR AS DETAILED ON THE CONSTRUCTION PLANS, AS SPECIFIED BY THE CITY OF MASSILLON.

1.

PHASE WORK SO THAT ONLY PART OF THE SITE IS BEING CLEARED AT ANY GIVEN TIME.
2.

ALL DEBRIS SHOULD BE KEPT OUT OF SURFACE WATER RESOURCES. IF POSSIBLE, LEAVE MULCH OR VEGETATION ON THE GROUND TO DECREASE RUNOFF AND POTENTIAL RUNOFF.
3.

APPLY TEMPORARY SEEDING TO EXPOSED AREAS.
4.

CONTRACTOR SHALL ACCESS WORKING AREAS FROM EXISTING GRAVEL ROAD.

GENERAL NOTES:

- 1)

THE CONTRACTOR IS TO ENSURE THAT NO WETLAND OR STREAM IS DISTURBED AS PART OF THIS PROJECT.
- 2)

CONTRACTOR SHALL PROVIDE NOTES AND INFORMATION REGARDING THE MAINTENANCE OF EACH PRACTICE TO ASSURE CONTINUED PERFORMANCE. EROSION AND SEDIMENT CONTROL MUST BE INSPECTED ONCE EVERY 7 DAYS AND WITHIN 24 HOURS OF 0.5" OR GREATER RAINFALL. A WRITTEN LOG OF THESE INSPECTIONS MUST BECOME PART OF THE SWP3. THIS LOG SHOULD INDICATE THE DATE OF THE INSPECTION, THE INSPECTOR, WEATHER CONDITIONS, OBSERVATIONS, ACTIONS TAKEN TO CORRECT PROBLEMS, AND THE DATE ACTION WAS TAKEN.
- 3)

ANY WASTE GENERATED ON SITE (SOLID, SANITARY, TOXIC, ETC.) WILL BE DISPOSED OF IN A PROPER AND LEGAL MANNER.

PLAN CERTIFICATION:

I, THE UNDERSIGNED, CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGED THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

BY: _____

DATE: _____

SPECIFICATIONS FOR PERMANENT SEEDING

Site Preparation

1. Subsoiler, plow, or other implement shall be used to reduce soil compaction and allow maximum infiltration. (Maximizing infiltration will help control both runoff rate and water quality.) Subsoiling should be done when the soil moisture is low enough to allow the soil to crack or fracture. Subsoiling shall not be done on slip-prone areas where soil preparation should be limited to what is necessary for establishing vegetation.

2. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation and seeding.

3. Topsoil shall be applied where needed to establish vegetation.

Seedbed Preparation

1. Lime-Agricultural ground limestone shall be applied to acid soil as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 100 pounds per 1,000-sq. ft. or 2 tons per acre.

2. Fertilizer-Fertilizer shall be applied as recommended by a soil test. In place of a soil test, fertilizer shall be applied at a rate of 25 pounds per 1,000-sq. ft. or 1000 pounds per acre of a 10-10-10 or 12-12-12 analyses.

3. The lime and fertilizer shall be worked into the soil with a disk harrow, spring-tooth harrow, or other suitable field implement to a depth of 3 inches. On sloping land, the soil shall be worked on the contour.

Seeding Dates and Soil Conditions

Seeding should be done March 1 to May 31 or August 1 to September 30. If seeding occurs outside of the above-specified dates, additional mulch and irrigation may be required to ensure a minimum of 80% germination. Tillage for seedbed preparation should be done when the soil is dry enough to crumble and not form ribbons when compressed by hand. For winter seeding, see the following section on dormant seeding.

Dormant Seedings

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

2. The following methods may be used for "Dormant Seeding":
- From October 1 through November 20, prepare the seedbed, add the required amounts of lime and fertilizer, then mulch and anchor. After November 20, and before March 15, broadcast the selected seed mixture. Increase the seeding rates by 50% for this type of seeding.
- From November 20 through March 15, when soil conditions permit, prepare the seedbed, lime and fertilize, apply the selected seed mixture, mulch and anchor. Increase the seeding rates by 50% for this type of seeding.
- Apply seed uniformly with a cyclone seeder, drill, cultivate seeder, or hydro-seeder (slurry may include seed and fertilizer) on a firm, moist seedbed.
- Where feasible, except when a cultivate type seeder is used, the seedbed should be firmed following seeding operations with a cultivate, roller, or light drag. On sloping land, seeding operations should be on the contour where feasible.

Mulching

1. Mulch material shall be applied immediately after seeding. Dormant seeding shall be mulched. 100% of the ground surface shall be covered with an approved material.

2. Materials
- Straw-If straw is used it shall be unrotted small-grain straw applied at the rate of 2 tons per acre or 90 pounds (two to three bales) per 1,000-sq. ft. The mulch shall be spread uniformly by hand or mechanically applied so the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000-sq.ft. sections and spread two 45-lb. bales of straw in each section.
- Hydroseeders-If wood cellulose fiber is used, it shall be applied at 2,000 lb./ac. or 46 lb/1,000 sq. ft.
- Other-Other acceptable mulches include rolled erosion control mattings or blankets applied according to manufacturer's recommendations or wood chips applied at 6 tons per acre.

SEED MIX	SEEDING RATE		NOTES
	LBS/ACRE	LBS/1,000 SQ. FT.	
GENERAL USE			
CREEPING RED FESCUE	20-40	1/2-1	FOR CLOSE MOWING & FOR WATERWAYS WITH <2.0 FT/SEC VELOCITY
DOMESTIC RYEGRASS	10-20	1/4-1/2	
KENTUCKY BLUEGRASS	20-40	1/2-1	
TALL FESCUE	40-50	1-1 1/4	
TURF-TYPE (DWARF) FESCUE	90	2 1/4	
STEEP BANKS OR CUT SLOPES			
TALL FESCUE	40-50	1-1 1/4	DO NOT SEED LATER THAN AUGUST
CROWN VETCH	10-20	1/4-1/2	
TALL FESCUE	20-30	1/2-3/4	
FLAT PEA	20-25	1/2-3/4	DO NOT SEED LATER THAN AUGUST
TALL FESCUE	20-30	1/2-3/4	
ROAD DITCHES AND SWALES			
TALL FESCUE	40-50	1-1 1/4	
TURF-TYPE (DWARF) FESCUE	90	2 1/4	
KENTUCKY BLUEGRASS	5	0.1	
LAWNS			
KENTUCKY BLUEGRASS	100-120	2	
PERENNIAL RYEGRASS		2	
KENTUCKY BLUEGRASS	100-120	2	FOR SHADED AREAS
CREEPING RED FESCUE		1 1/2	

SPECIFICATIONS FOR PERMANENT SEEDING (CONTINUED)

3. Straw and Mulch Anchoring Methods
Straw mulch shall be anchored immediately to minimize loss by wind or water.
- Mechanical-A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but, generally, be left longer than 6 inches.
- Mulch Netting-Netting shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.
- Asphalt Emulsion-Asphalt shall be applied as recommended by the manufacturer or at the rate of 160 gallons per acre.

- Synthetic Binders-Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Tack or equivalent may be used at rates specified by the manufacturer.
- Wood Cellulose Fiber-Wood cellulose fiber shall be applied at a net dry weight of 750 pounds per acre. The wood cellulose fiber shall be mixed with water with the mixture containing a maximum of 50 pounds cellulose per 100 gallons of water.

Irrigation

Permanent seeding shall include irrigation to establish vegetation during dry weather or on adverse site conditions, which require adequate moisture for seed germination and plant growth.

Irrigation rates shall be monitored to prevent erosion and damage to seeded areas from excessive runoff.

SPECIFICATIONS FOR MULCHING

1. Mulch and other appropriate vegetative practices shall be applied to disturbed areas within 7 days of grading if the area is to remain dormant (undisturbed) for more than 21 days or on areas and portions of the site which can be brought to final grade.

2. Mulch shall consist of one of the following:
* Straw - Straw shall be unrotted small grain straw applied at the rate of 2 tons/ac. or 90 lb./1,000 sq. ft. (two to three bales). The straw mulch shall be spread uniformly by hand or mechanically so the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 sq.ft. sections and place two 45-lb. bales of straw in each section.
* Hydroseeders - Wood cellulose fiber should be used at 2,000 lb./ac. or 46 lb./1,000 sq. ft.
* Other - Acceptable mulches include mulch mattings and rolled erosion control products applied according to manufacturer's recommendations or wood mulch/chips applied at 10-20 tons/ac.

3. Mulch Anchoring - Mulch shall be anchored immediately to minimize loss by wind or runoff. The following are acceptable methods for anchoring mulch.
* Mechanical - Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but be left generally longer than 6 inches.
* Mulch Nettings - Use according to the manufacturer's recommendations, following all placement and anchoring requirements. Use in areas of water concentration and steep slopes to hold mulch in place.
* Synthetic Binders - For straw mulch, synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Tack or equal may be used at rates recommended by the manufacturer. All applications of Synthetic Binders must be conducted in such a manner where there is no contact with waters of the state.
* Wood Cellulose Fiber - Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 lb./acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lb./100 gal. of wood cellulose fiber.

AREA REQUIRING PERMANENT STABILIZATION	TIME FRAME TO APPLY EROSION CONTROL
ANY AREA THAT WILL LIE DORMANT FOR ONE YEAR OR MORE	WITHIN SEVEN DAYS OF THE MOST RECENT DISTURBANCE
ANY AREA WITHIN 50 FT. OF A SURFACE WATER OF THE STATE AND AT FINAL GRADE.	WITHIN TWO DAYS OF REACHING FINAL GRADE
ANY OTHER AREAS AT FINAL GRADE	WITHIN SEVEN DAYS OF REACHING FINAL GRADE WITHIN THAT AREA

AREA REQUIRING TEMPORARY STABILIZATION	TIME FRAME TO APPLY EROSION CONTROL
ANY DISTURBED AREAS WITHIN 50 FT. OF A SURFACE WATER OF THE STATE AND NOT AT FINAL GRADE	WITHIN TWO DAYS OF THE MOST RECENT DISTURBANCE IF THE AREA WILL REMAIN IDLE FOR MORE THAN 14 DAYS
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREAS THAT WILL BE DORMANT FOR MORE THAN 21 DAYS BUT LESS THAN ONE YEAR, AND NOT WITHIN 50 FT. OF A SURFACE WATER OF THE STATE	WITHIN SEVEN DAYS OF THE MOST RECENT DISTURBANCE WITHIN THE AREA FOR RESIDENTIAL SUBDIVISIONS, DISTURBED AREAS MUST BE STABILIZED AT LEAST SEVEN DAYS PRIOR TO TRANSFER OF PERMIT COVERAGE FOR THE INDIVIDUAL LOT(S)
DISTURBED AREAS THAT WILL BE IDLE OVER WINTER	PRIOR TO ONSET OF WINTER WEATHER

- 1. Construction personnel, including subcontractors who may use or handle hazardous or toxic materials, shall be made aware of the following general guidelines regarding disposal and handling of hazardous and construction wastes:
- * Prevent spills
- * Use products up
- * Follow label directions for disposal
- * Remove lids from empty bottles and cans when disposing in trash
- * Recycle wastes whenever possible
- * Don't pour into waterways, storm drains or onto the ground
- * Don't pour down the sink, floor drain or septic tanks
- * Don't bury chemicals or containers
- * Don't burn chemicals or containers
- * Don't mix chemicals together

3. No construction related waste materials are to be buried on-site. By exception, clean fill (bricks, hardened concrete, soil) may be utilized in a way which does not encroach upon natural wetlands, streams or floodplains or result in the contamination of waters of the state.

5. Equipment Fueling and Maintenance, oil changing, etc., shall be performed away from watercourses, ditches or storm drains, in an area designated for that purpose. The designated area shall be equipped for recycling oil and catching spills. Secondary containment shall be provided for all fuel oil storage tanks. These areas must be inspected every seven days and within 24 hrs. of a 0.5 inch or greater rain event to ensure there are no exposed materials which would contaminate storm water. Site operators must be aware that Spill Prevention Control and Countermeasures (SPCC) requirements may apply. An SPCC plan is required for sites with one single above ground tank of 660 gallons or more, accumulative above ground storage of 1330 gallons or more, or 42,000 gallons of underground storage. Contaminated soils must be disposed of in accordance with Item 8.

7. **Spill Reporting Requirements:** Spills on pavement shall be absorbed with sawdust or kitty litter and disposed of with the trash at a licensed sanitary landfill. Hazardous or industrial wastes such as most solvents, gasoline, oil-based paints, and cement curing compounds require special handling. Spills shall be reported to Ohio EPA (1-800-282- 9378). Spills of 25 gallons or more of petroleum products shall be reported to Ohio EPA, the local fire department, and the Local Emergency Planning Committee within 30 min. of the discovery of the release. All spills which contact waters of the state must be reported to Ohio EPA.

8. Contaminated Soils. If substances such as oil, diesel fuel, hydraulic fluid, antifreeze, etc. are spilled, leaked, or released onto the soil, the soil should be dug up and disposed of at licensed sanitary landfill or other approved petroleum contaminated soil remediation facility. (not a construction/demolition debris landfill). Note that storm water run off associated with contaminated soils are not be authorized under Ohio EPA's General Storm Water Permit associated with Construction Activities.

9. Open Burning. No materials containing rubber, grease, asphalt, or petroleum products, such as tires, autoparts, plastics or plastic coated wire may be burned (OAC 3745-19). Open burning is not allowed in restricted areas, which are defined as: 1) within corporation limits; 2) within 1000 feet outside a municipal corporation having a population of 1000 to 10,000; and 3) a one mile zone outside of a corporation of 10,000 or more. Outside of restricted areas, no open burning is allowed within a 1000 feet of an inhabited building on another property. Open burning is permissible in a restricted area for: heating tor, welding, smudge pots and similar occupational needs, and heating for warmth or outdoor barbeques. Outside of restricted areas, open burning is permissible for landscape or land-clearing wastes (plant material, with prior written permission from Ohio EPA), and agricultural wastes, excluding buildings.

0. Dust Control or dust suppressants shall be used to prevent nuisance conditions, in accordance with the manufacturer's specifications and in a manner, which prevent a discharge to waters of the state. Sufficient distance must be provided between applications and nearby bridges, catch basins, and other waterways. Application (excluding water) may not occur when rain is imminent as noted in the short term forecast. Used oil may not be applied for dust control.

1. **Other Air Permitting Requirements:** Certain activities associated with construction will require air permits including but not limited to: mobile concrete batch plants, mobile asphalt plants, concrete crushers, large generators, etc. These activities will require specific Ohio EPA Air Permits for installation and operation. Operators must seek authorization from the corresponding district of Ohio EPA. For demolition of all commercial sites, a Notification for Restoration and Demolition must be submitted to Ohio EPA to determine if asbestos corrective actions are required.

2. Process Waste Water/Leachate Management. Ohio EPA's Construction General Permit only allows the discharge of storm water and does not include other waste streams/discharges such as vehicle and/or equipment washing, on-site septic leachate, concrete wash outs, which are considered process wastewaters. All process wastewaters must be collected and properly disposed at an approved disposal facility. In the event, leachate or seepage is discharged; it must be isolated for collection and proper disposal and corrective actions taken to eliminate the source of waste water.

3. A Permit To Install (PTI) is required prior to the construction of all centralized sanitary systems, including sewer extensions, and sewerage systems except those serving one, two, and three family dwellings) and potable water lines. Plans must be submitted and approved by Ohio EPA. Issuance of an Ohio EPA Construction General Storm Water Permit does not authorize the installation of any sewerage system where Ohio EPA has not approved a PTI.



1. Stone Size – ODOT # 2 (1.5–2.5 inch) stone shall be used, or recycled concrete equivalent.
2. Length – The Construction entrance shall be as long as required to stabilize high traffic areas but not less than 70 ft. (exception: apply 30 ft. minimum to single residence lots).
3. Thickness – The stone layer shall be at least 6 inches thick for light duty entrances or at least 10 inches for heavy duty use.
4. Width – The entrance shall be at least 14 feet wide, but not less than the full width at points where ingress or egress occurs.
5. Geotextile – A geotextile shall be laid over the entire area prior to placing stone. It shall be composed of strong rot-proof polymeric fibers and meet the following specifications:

Geotextile Specification for Construction Entrance	
Minimum Tensile Strength	200 LBS.
Minimum Puncture Strength	80 PSI.
Minimum Tear Strength	50 LBS.
Minimum Burst Strength	320 PSI.
Minimum Elongation	20%
Equivalent Opening Size	EOS<0.6 mm
Permittivity	1x10-3 cm/sec.

6. Timing – The construction entrance shall be installed as soon as is practicable before major grading activities.

7. Culvert – A pipe or culvert shall be constructed under the entrance if needed to prevent surface water from flowing across the entrance or to prevent runoff from being directed out onto paved surfaces.

8. **Water Bar** – A water bar shall be constructed as part of the construction entrance if needed to prevent surface runoff from flowing the length of the construction entrance and out onto paved surfaces.

9. Maintenance – Top dressing of additional stone shall be applied as conditions demand. Mud spilled, dropped, washed or tracked onto public roads, or any surface where runoff is not checked by sediment controls, shall be removed immediately. Removal shall be accomplished by scraping or sweeping.

10. 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 areas.

11. Removal – The entrance shall remain in place until the disturbed area is stabilized or replaced with a permanent roadway or entrance.

1. Filter strips shall be graded to prevent runoff from concentrating. Depressions, ridges and swales shall be graded out to achieve a uniform slope having a level grade across the slope.

2. To assure that runoff remains as sheet flow through the filter strip, a level spreader shall be used at the top of the slope. The rock or grass level spreader must be placed on a contour, and shall have a minimum width and depth of 1 foot.

4. A subsoiler, plow or other implement shall be used to decrease soil compaction and allow maximum infiltration. Subsoiling shall be done when the soil moisture is low enough to allow the soil to crack or fracture.

5. Because a dense vegetation is critical for effective filter strips, only a dense stand of vegetation without rills or gullies shall be acceptable. If rills or gullies form or if vegetative cover is not dense, a new seedbed shall be prepared and replanted.

6. The filter strip shall be seeded no later than September 30th to assure that vegetation establishes prior to the onset of winter weather.

NOTE: See Specifications for Permanent Seeding.

1. The check dam shall be constructed of 4-8 inch diameter stone, placed so that it completely covers the width of the channel. ODOT Type D stone is acceptable, but should be underlain with a gravel filter consisting of ODOT No. 3 or 4 or suitable filter fabric.

2. Maximum height of check dam shall not exceed 3.0 feet.

3. The midpoint of the rock check dam shall be a minimum of 6 inches lower than the sides in order to direct across the center and away from the channel sides.

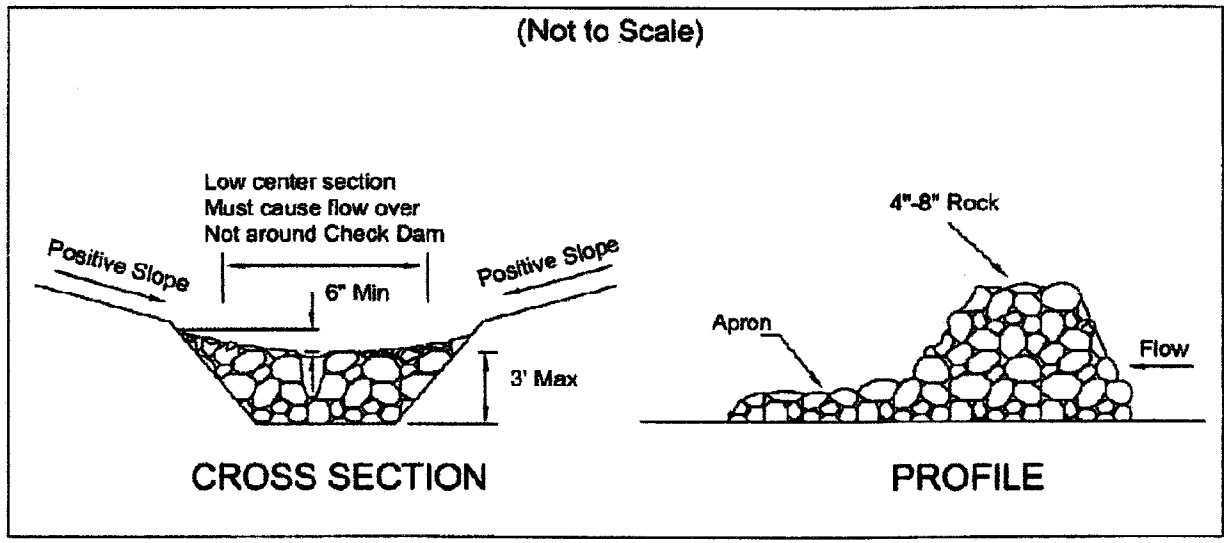
4. The base of the check dam shall be entrenched approximately 6 inches.

5. Spacing of check dams shall be in a manner such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.

6. A Splash Apron shall be constructed where check dams are expected to be in use for an extended period of time, a stone apron shall be constructed immediately downstream of the check dam to prevent flows from undercutting the structure. The apron should be 6 in. thick and its length two times the height of the dam.

7. Stone placement shall be performed either by hand or mechanically as long as the center of check dam is lower than the sides and extends across entire channel.

8. Side slopes shall be a minimum of 2:1.



1. Drainage area should not exceed 10 acres. Larger areas require a more extensive design.
2. The channel cross section may be parabolic or trapezoidal. Disk the base of the dike before placing fill. Build the dike 10% higher than designed for settlement. The dike shall be compacted by traversing with tracked earth-moving equipment.
3. The minimum cross section of the levee or dike will be as follows: (Minimum design freeboard shall be 0.3 foot.) Where construction traffic will cross, the top width may be made wider and the side slopes flatter than specified above.

Dike Top Width (ft.)	Height (ft.)	Side Slopes	
0	1.5	4:1	Trapezoidal
4	1.5	2:1	Parabolic

TEMPORARY DIVERSION STABILIZATION TREATMENT				5-10 ac.
Diversion Slope	<2 ac.	2-5 ac.		
0-3%	Seed & Straw	Seed & Straw	Seed & Straw	
3-5%	Seed & Straw	Seed & Straw	Matting	
5-8%	Seed & Straw	Matting	Matting	
8-20%	Seed & Straw	Matting	Engineered	

5. Outlet runoff onto a stabilized area, into a properly designed waterway, grade stabilization structure, or sediment trapping facility.

(Not to Scale)

1
4

1.5'

1
2

1.5'

CROSS SECTION

1. The minimum water bar dimensions shall be:
Top width of berm/dike - 2 feet minimum.
Height/depth - 18 inches unless otherwise noted on plans.
Side Slopes - Sufficiently flat to accommodate the expected traffic.

TABLE 5.6.1 Water Bar Spacing

Road Grade (%)	Distance (ft.)
1	400
2	250
5	135
15	80
10	60
20	45

6. The water bars shall be angled slightly downslope across the centerline of the travel lane.

1 . Silt fence shall be constructed before upslope land disturbance begins.

3. Ends of the silt fences shall be brought upslope slightly so that water ponded by the silt fence will be prevented from flowing around the ends.

5. Where possible, vegetation shall be preserved for 5 feet (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.

7. The silt fence shall be placed in an excavated or sliced trench cut a minimum of 6 inches deep. The trench shall be made with a trencher, cable laying machine, slicing machine, or other suitable device that will ensure an adequately uniform trench depth.

9. Seams between sections of silt fence shall be spliced together only at a support post with a minimum 6-in. overlap prior to driving into the ground, (see details).

Sediment deposits shall be routinely removed when the deposit reaches approximately one-half of the height of the silt fence.

Criteria for silt fence materials

2. Silt fence fabric – See chart below.

Fabric Properties	Values	Test Method
Minimum Tensile Strength	120 LBS.	ASTM D 4632
Maximum Elongation at 60 lbs.	50%	ASTM D 4632
Minimum Puncture Strength	50 LBS.	ASTM D 4833
Minimum Tear Strength	40 LBS.	ASTM D 4533
Apparent Opening Size	<0.84 mm	ASTM D 4751
Minimum Permittivity	1x10 ⁻² sec.-1	ASTM D 4491
UV Exposure Strength Retention	70%	ASTM G 4355

1. Inlet protection shall be constructed either before upslope land disturbance begins or before the inlet becomes functional.

3. The wooden frame shall be constructed of 2-inch by 4-inch construction grade lumber. The 2-inch by 4-inch posts shall be driven one (1) ft. into the ground at four corners of the inlet and the top portion of 2-inch by 4-inch frame assembled using the overlap joint shown. The top of the frame shall be at least 6 inches below adjacent roads if ponded water will pose a safety hazard to traffic.

5. Geotextile material shall have an equivalent opening size of 20-40 sieve and be resistant to sunlight. It shall be stretched tightly around the frame and fastened securely. It shall extend from the top of the frame to 18 inches below the inlet notch elevation. The geotextile shall overlap across one side of the inlet so the ends of the cloth are not fastened to the same post.

6. Backfill shall be placed around the inlet in compacted 6-inch layers until the earth is even with notch elevation on ends and top elevation on sides.

7. A compacted earth dike or check dam shall be constructed in the ditch line below the inlet if the inlet is not in a depression. The top of the dike shall be at least 6 inches higher than the top of the frame.

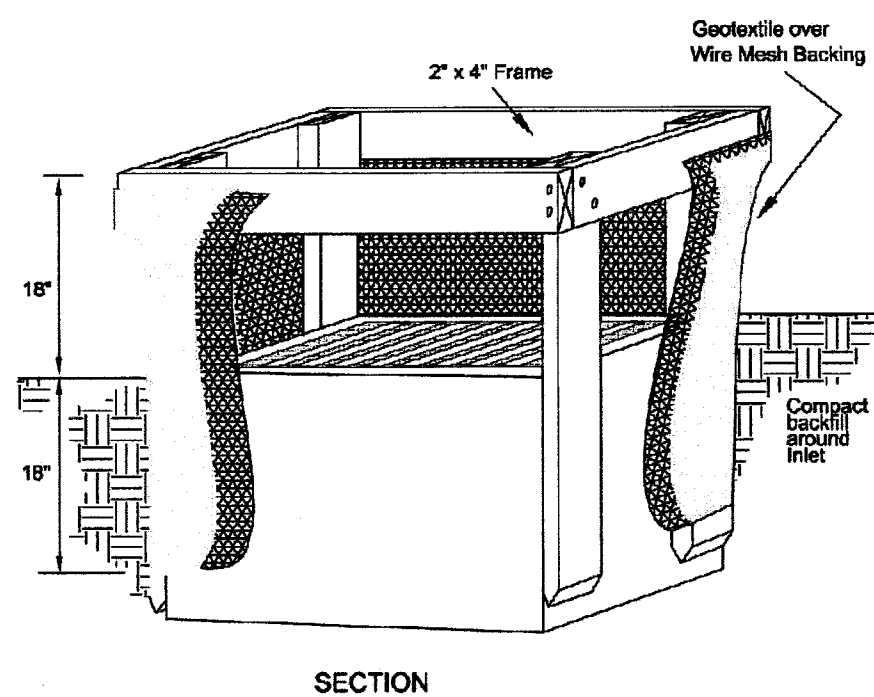


TABLE 7.8.1 TEMPORARY SEEDING SPECIES SELECTION
FROM ODNr'S RAINWATER AND LAND DEVELOPMENT MANUAL

SEEDING DATES	SPECIES	SEEDING RATE	
		LBS/1,000 SQ. FT.	LBS/ACRE
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 NOVEMBER	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 RYE	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	40
NOVEMBER 1 TO FEB. 29	USE MULCH ONLY OR DORMANT SEEDING		

2. Temporary seed shall be applied between construction operations on soil that will not be graded or reworked for 21 days or greater. These idle areas shall be seeded within 7 days after grading.

3. The seedbed should be pulverized and loose to ensure the success of establishing vegetation. Temporary seeding should not be postponed if ideal seedbed preparation is not possible.

4. Soil Amendments—Temporary vegetation seeding rates shall establish adequate stands of vegetation, which may require the use of soil amendments. Base rates for lime and fertilizer shall be used.

5. Seeding Method—Seed shall be applied uniformly with a cyclone spreader, drill, cultivate seeder, or hydroseeder. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultivate. If hydroseeding is used, the seed and fertilizer will be mixed on-site and the seeding shall be done immediately and without interruption.

1. Applications of temporary seeding shall include mulch, which shall be applied during or immediately after seeding. Seedings made during optimum seeding dates on favorable, very flat soil conditions may not need mulch to achieve adequate stabilization.

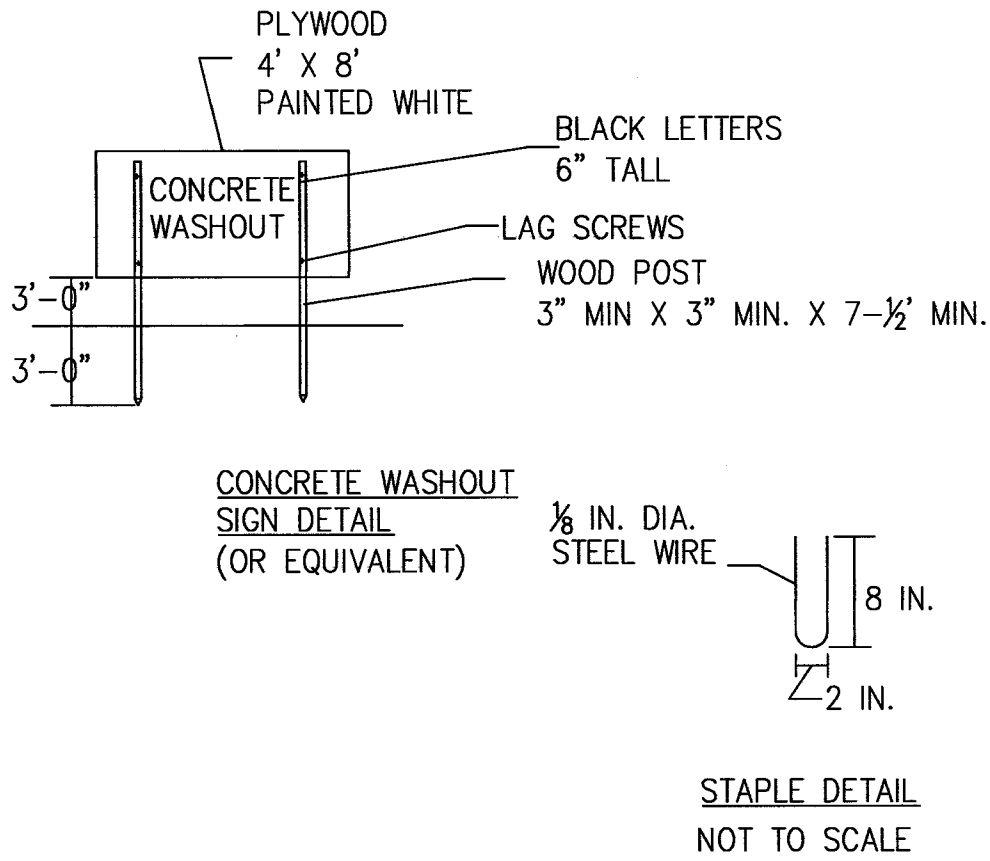
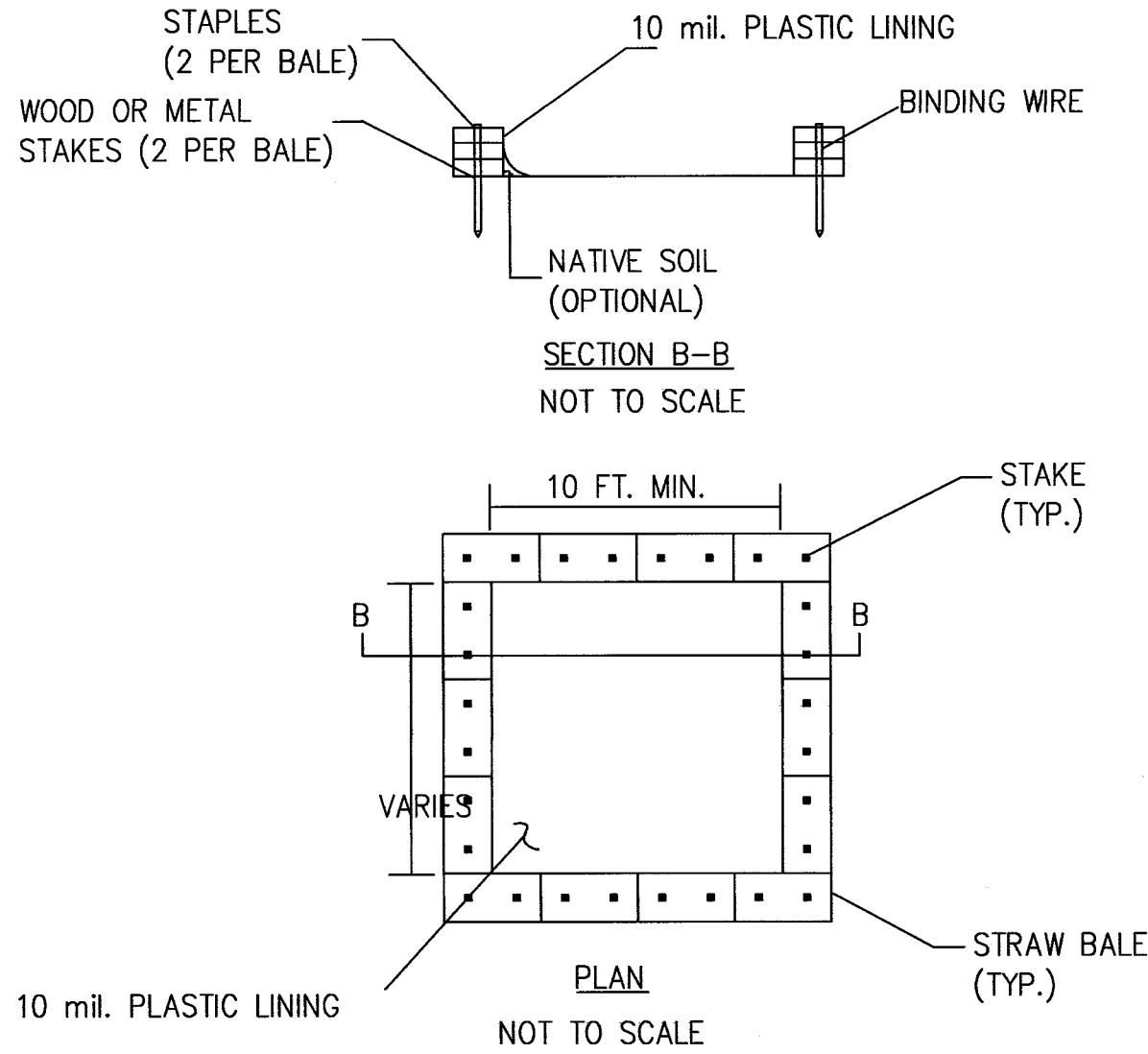
- Straw-If straw is used, it shall be unrolled small-grain straw applied at a rate of 2 tons per acre or 90 lbs./1,000 sq. ft. (2-3 bales)
- Hydroseeds-If wood cellulose fiber is used, it shall be used at 2000 lbs./ac. or 46 lb./1,000-sq.-ft.
- Other-Other acceptable mulches include mulch matings applied according to manufacturer's recommendations or wood chips applied at 6 ton/ac.

3. Straw Mulch shall be anchored immediately to minimize loss by wind or water.
Anchoring methods:

- Mechanical—A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but left to a length of approximately 6 inches.
- Mulch Netting—Netting shall be used according to the manufacturers recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.

- **Synthetic Binders**—Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Track or equivalent may be used at rates recommended by the manufacturer.

– Wood Cellulose Fiber—Wood cellulose fiber binder shall be applied at a net dry wt. of 750 lb./ac. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lb./100 gal.



TEMPORARY CONCRETE WASHOUT FACILITY

TEMPORARY CONCRETE WASHOUT FACILITY TYPE "ABOVE GRADE" SHALL BE CONSTRUCTED AS SHOWN, WITH A RECOMMENDED MINIMUM LENGTH AN WIDTH OF 10 FEET, BUT WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. THE LENGTH AND WIDTH OF A FACILITY MAYBE INCREASED AT THE CONTRACTOR'S EXPENSE UPON APPROVAL OF THE OWNER.

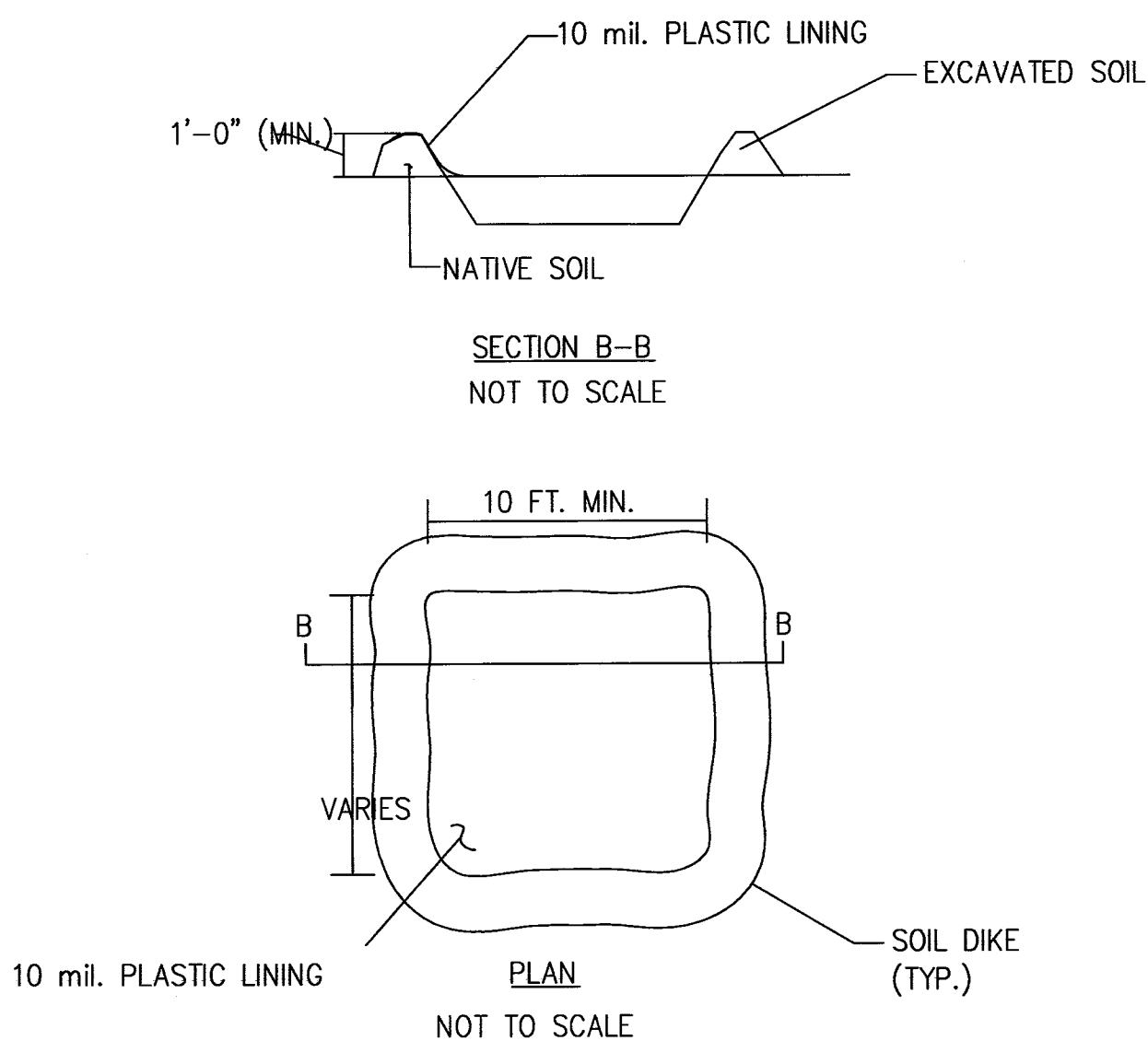
PLASTIC LINING MATERIAL SHALL BE A MINIMUM OF 10-MIL POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES, TEARS OR OTHER DEFECTS THAT COMPRISE THE IMPERMEABILITY OF THE MATERIAL. LINER SEAMS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.

THE CONTRACTOR IS TO REMOVE THE WASHOUT FACILITY ONCE IT IS NOT NEEDED FOR THE CONSTRUCTION ACTIVITY. THE HARDENED CONCRETE SHALL BE REMOVED AND DISPOSED OF AS ALLOWED BY THE LOCAL, STATE AND FEDERAL LAWS. THE DISPOSAL OF THE PCC DRIED RESIDUES, SLURRIES OR LIQUID WASTE SHALL BE DISPOSED OF OUTSIDE OF THE PROJECT LIMITS IN CONFORMANCE TO THE LOCAL, STATE, AND FEDERAL LAWS. THE BALANCE OF THE MATERIALS USED SHALL ALSO BE REMOVED AND DISPOSED OF AS ALLOWED BY LOCAL, STATE AND FEDERAL LAWS.

HOLE, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED AND REPAIRED TO THE SATISFACTION OF THE OWNER.

ONCE THE WASHOUT FACILITY IS AT 75% CAPACITY IS TO BE EMPTIED AND OR AN ADDITIONAL WASHOUT CONSTRUCTED.

DAMAGED FACILITIES CAN NOT BE USED THEY MUST BE REMOVED AND DISPOSED OF.



TEMPORARY CONCRETE WASHOUT FACILITY

TEMPORARY CONCRETE WASHOUT FACILITY TYPE "BELOW GRADE" SHALL BE CONSTRUCTED AS SHOWN, WITH A RECOMMENDED MINIMUM LENGTH AND WIDTH OF 10 FEET, BUT WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. THE LENGTH AND WIDTH OF A FACILITY MAYBE INCREASED AT THE CONTRACTOR'S EXPENSE UPON APPROVAL OF THE OWNER.

PLASTIC LINING MATERIAL SHALL BE A MINIMUM OF 10-MIL POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES, TEARS OR OTHER DEFECTS THAT COMPRISE THE IMPERMEABILITY OF THE MATERIAL. LINER SEAMS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.

THE CONTRACTOR IS TO REMOVE THE WASHOUT FACILITY ONCE IT IS NOT NEEDED FOR THE CONSTRUCTION ACTIVITY. THE HARDENED CONCRETE SHALL BE REMOVED AND DISPOSED OF AS ALLOWED BY THE LOCAL, STATE AND FEDERAL LAWS. THE DISPOSAL OF THE PCC DRIED RESIDUES, SLURRIES OR LIQUID WASTE SHALL BE DISPOSED OF OUTSIDE OF THE PROJECT LIMITS IN CONFORMANCE TO THE LOCAL, STATE, AND FEDERAL LAWS. THE BALANCE OF THE MATERIALS USED SHALL ALSO BE REMOVED AND DISPOSED OF AS ALLOWED BY LOCAL, STATE AND FEDERAL LAWS.

HOLE, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED AND REPAIRED TO THE SATISFACTION OF THE OWNER.

ONCE THE WASHOUT FACILITY IS AT 75% CAPACITY IT IS TO BE EMPTIED AND OR AN ADDITIONAL WASHOUT CONSTRUCTED.

DAMAGED FACILITIES CAN NOT BE USED. THEY MUST BE REMOVED AND DISPOSED OF.

SEDIMENT BASINS

1. Sediment basins shall be constructed and operational before upslope land disturbance begins.

2. Site Preparation –The area under the embankment shall be cleared, grubbed, and stripped of any vegetation and root mat. The pool area shall be cleared as needed to facilitate sediment cleanout. Gullies and sharp breaks shall be sloped to no steeper than 1:1. The surface of the foundation area will be thoroughly scarified before placement of the embankment material.

3. Cut-Off Trench –The cutoff trench shall be excavated along the centerline of the embankment. The minimum depth shall be 3 ft. unless specified deeper on the plans or as a result of site conditions. The minimum bottom width shall be 4 ft., but wide enough to permit operation of compaction equipment. The trench shall be kept free of standing water during backfill operations.

4. Embankment –The fill material shall be free of all sod, roots, frozen soil, stones over 6 in. in diameter, and other objectionable material. The placing and spreading of the fill material shall be started at the lowest point of the foundation and the fill shall be brought up in approximately 6 in. horizontal layers or of such thickness that the required compaction can be obtained with the equipment used. Construction equipment shall be operated over each layer in a way that will result in the required compaction. Special equipment shall be used when the required compaction cannot be obtained without it. The moisture content of fill material shall be such that the required degree of compaction can be obtained with the equipment used.

5. Pipe Spillway –The pipe conduit barrel shall be placed on a firm foundation to the lines and grades shown on the plans. Connections between the riser and barrel, the antiseep collars and barrel and all pipe joints shall be watertight. Selected backfill material shall be placed around the conduit in layers and each layer shall be compacted to at least the same density as the adjacent embankment. All compaction within 2 ft. of the pipe spillway will be accomplished with hand-operated tamping equipment.

6. Skimmer Dewatering Devise –The skimmer drain pipe shall attache to the pond outlet structure at the future location of the WQV outlet. The orifice size to be drilled into the end cap in the Skimmer Dewatering Devise detail is shown on the table on sheet 8.

7. Trash Racks –The top of the riser shall be fitted with trash racks firmly fastened to the riser pipe.

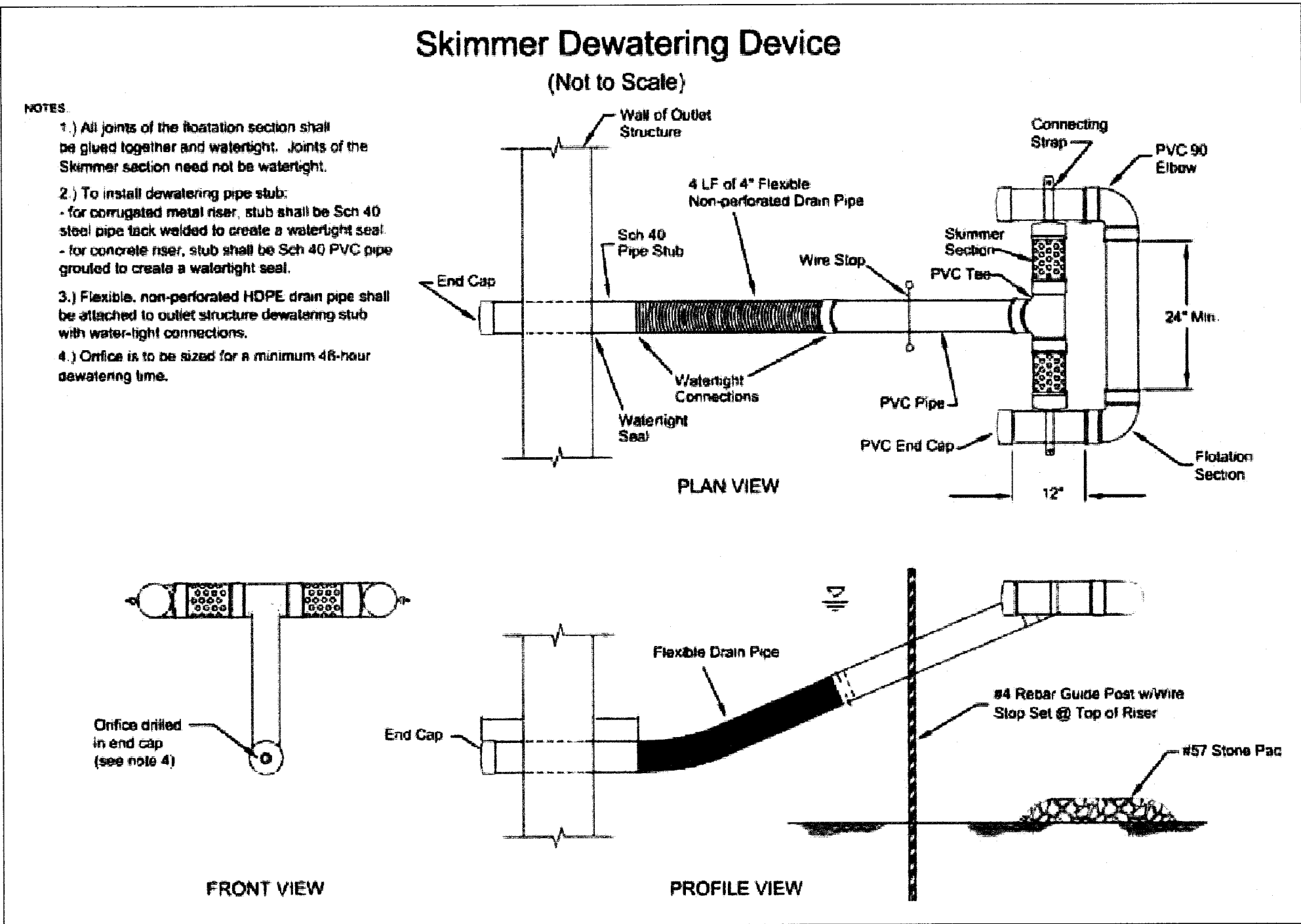
8. Emergency Spillway – The emergency spillway shall be cut in undisturbed ground. Accurate construction of the spillway elevation and width is critical and shall be within a tolerance of 0.2 ft.

9. Seed and Mulch –The sediment basin shall be stabilized immediately following its construction. In no case shall the embankment or emergency spillway remain bare for more than 7 days.

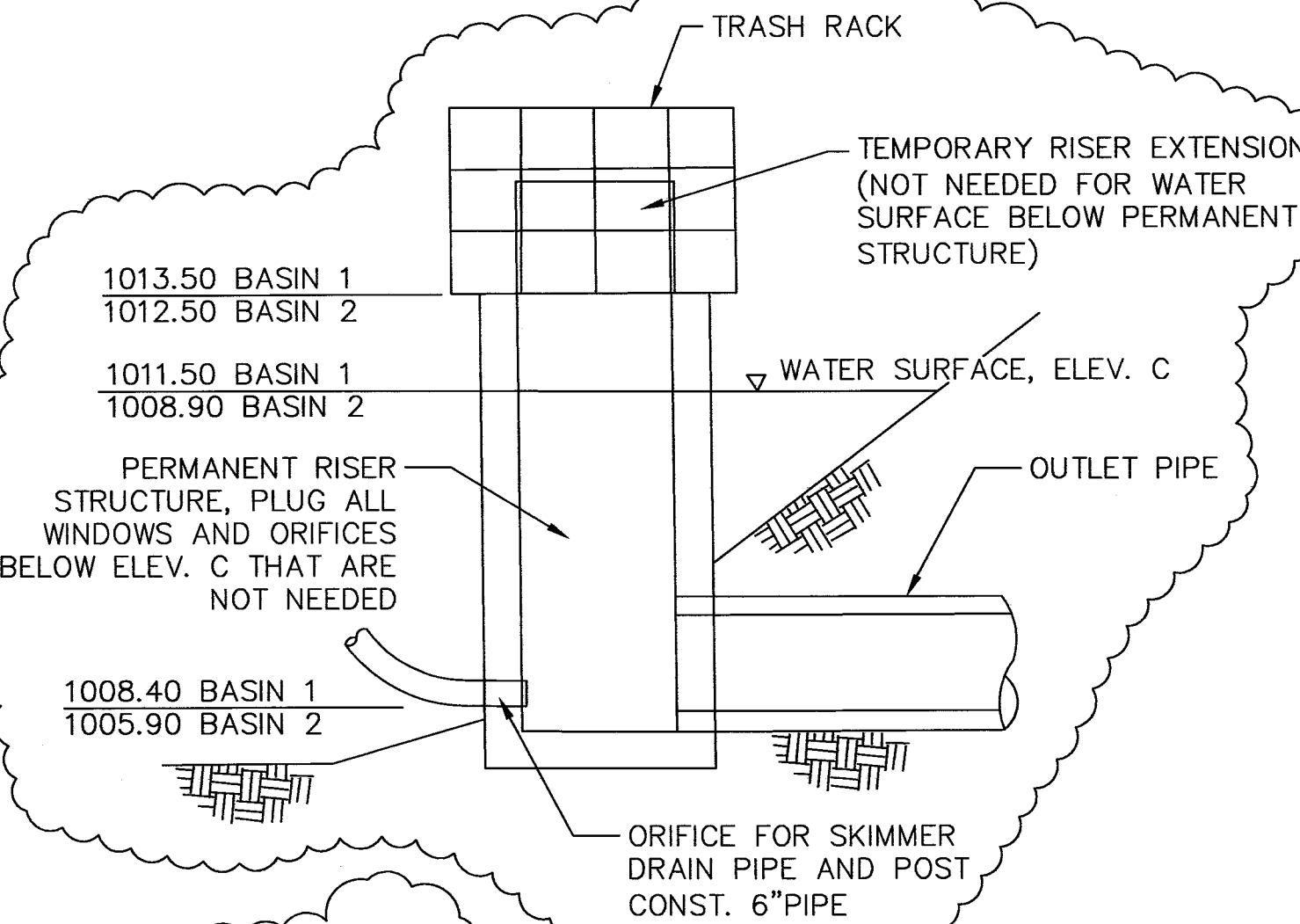
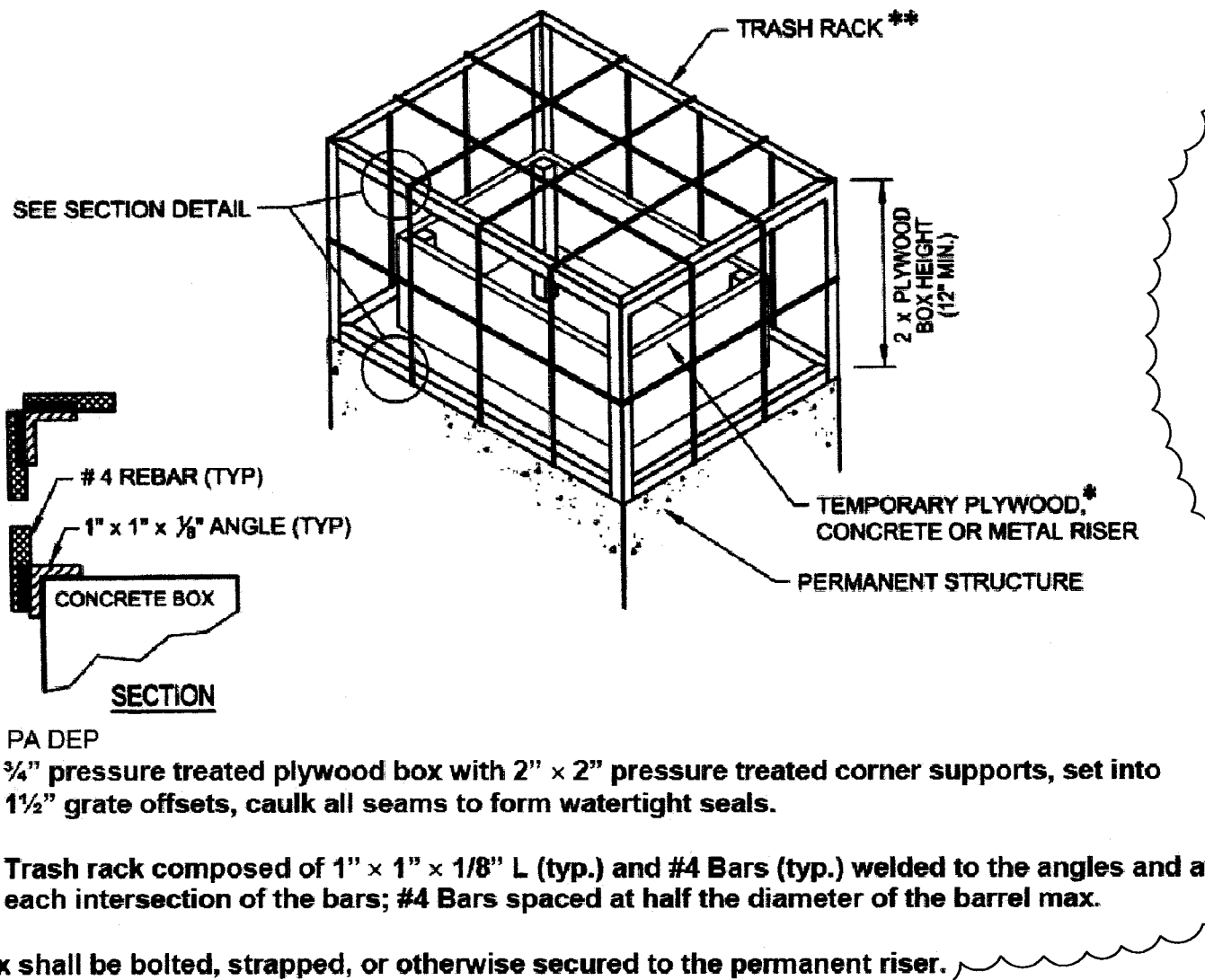
10. Sediment Cleanout –Sediment shall be removed and the sediment basin restored to its original dimensions when the sediment has filled one-half the pond's original depth or as indicated on the plans. Sediment removed from the basin shall be placed so that it will not erode.

11. Earthen Baffles –The earthen baffles shown on the Grading Plan and the SWPPP are to be constructed during construction of the sediment basins. They are to be regraded as necessary after construction, and remain in place as part of the water quality and detention basins.

12. Final removal – Sediment basins shall be removed after the upstream drainage area is stabilized or as indicated in the plans. Dewatering and removal shall NOT cause sediment to be discharged. The sediment basin site and sediment removed from the basin shall be stabilized. If needed for post-construction water management, the basin is to be regraded to meet final layout. The outlet structure is to be modified as needed.



TEMPORARY RISER EXTENSION AND TRASH RACK FOR PERMANENT STRUCTURE



CAD FILE: R:\Common\Craig Klein\030-2660 Baker Hughes\TEMPORARY FACILITY PLAN\BAKER HUGHES GENERAL AND SANITARY NOTES.dwg PLOT DATE/TIME: 3/7/2013 4:08 PM

UTILITIES

LISTED BELOW ARE ALL KNOWN UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

DOMINION EAST OHIO GAS COMPANY
4725 SOUTHWAY ST. S.W.
CANTON, OH 44706
(330) 478-3142

AQUA WATER
P.O. BOX 584
MASSILLON, OH 44648
(330) 833-4156

OHIO EDISON
STARK DIVISION
2600 S. ERIE ST.
MASSILLON, OH 44545
(330) 830-7085

CITY OF MASSILLON
SANITARY SEWER
151 LINCOLN WAY EAST
MASSILLON, OH 44646
(330) 830-1722

AT&T
50 W.BOWERY, 6TH FLOOR
AKRON, OH 44308
800-384-8057

THE CONTRACTOR SHALL NOTIFY ALL UTILITIES 48 HOURS PRIOR TO WORK. THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE SHOWN AT APPROXIMATE LOCATIONS AND WHERE OBTAINED AS REQUIRED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 OF THE OHIO REVISED CODE OUPS – 1-800-362-2764 OGUPUPS – 1-800-925-0988

DATUM ELEVATION

ALL BENCHMARKS ARE BASED ON REFERENCE BENCHMARKS PROVIDED BY THE CITY OF MASSILLON

STATIONING

ALL STATIONING SHOWN IS REFERENCED TO THE BASELINE AS SHOWN.

SUBSURFACE CONDITIONS

IT IS THE OBLIGATION AND RESPONSIBILITY OF THE CONTRACTOR TO MAKE HIS OWN INVESTIGATION OF SUBSURFACE CONDITIONS PRIOR TO SUBMITTING THEIR BID. PROSPECTIVE BIDDERS ARE TO COORDINATE WITH THE OWNER FOR ACCESS TO THE SITE FOR INSPECTIONS AND EXPLORATORY EXCAVATION. THE BIDDER SHALL CONTACT THE OWNER AT LEAST 72 HOURS IN ADVANCE OF THE DESIRED INSPECTION OR EXCAVATION. THE BIDDER SHALL CONTACT O.U.P.S. AND OBTAIN LOCATIONS OF OTHER UTILITIES.

QUANTITIES

QUANTITIES ARE INDICATED FOR COMPARISON OF BIDS ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY QUANTITIES BEFORE ORDERING MATERIALS. VARIATIONS FROM THE PLAN QUANTITIES SHALL BE APPROVED BY THE OWNER BEFORE MATERIAL ORDERS ARE PLACED. MATERIALS REJECTED DUE TO INCOMPATIBILITY BETWEEN ORDERED QUANTITIES AND FIELD CONDITIONS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PRESERVATION OF EXISTING UTILITY SERVICES

ANY EXISTING WATER LINE, SANITARY SEWER, STORM SEWER, GAS LINE OR THE UTILITY IN OR OUTSIDE OF THE CONSTRUCTION LIMITS, DAMAGED DURING CONSTRUCTION OF THE PROPOSED PROJECT SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

CONTRACTOR AVAILABILITY

THE CONTRACTOR SHALL SUPPLY THE OWNER WITH A 24 HOUR PHONE NUMBER WHERE THE CONTRACTOR SHALL BE AVAILABLE FOR EMERGENCIES.

PRESERVATION OF PRIVATE PROPERTY

THE CONTRACTOR SHALL PERFORM WORK AS TO NOT DISTURB, DAMAGE OR DESTROY ANY TELEPHONE OR POWER POLES, SIGNS, LANDSCAPING ITEMS, ETC.. ANY ITEM DAMAGED OR DESTROYED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE AND ANY ITEM DISTURBED OR IN CONFLICT WITH THE WORK TO BE PERFORMED SHALL BE REMOVED AND RESET AT THE CONTRACTOR'S EXPENSE. PRIOR ENGINEER APPROVAL IS REQUIRED BEFORE ANY OF THE ABOVE ITEMS ARE PERFORMED.

ACCESSIBILITY TO PRIVATE PROPERTY

ACCESS TO ALL DRIVEWAYS AND PARKING AREAS WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THE TRENCH SHALL BE BACKFILLED AT THE END OF EACH WORK DAY TO PROVIDE ACCESS. THE CONTRACTOR MUST NOTIFY EACH PROPERTY OWNER AT LEAST 24 HOURS IN ADVANCE OF CUTTING THEIR DRIVEWAY.

RESTORATION

FOR SANITARY SEWER INSTALLED, TESTED, AND ACCEPTED UP TO MAY 15TH OF ANY CALENDAR YEAR, RESTORATION SHALL BE COMPLETE BY JUNE 30th OF THAT YEAR. FOR INSTALLATION OF SANITARY SEWER TESTED AND ACCEPTED FROM MAY 15th TO SEPTEMBER 30th OF ANY CALENDAR, YEAR RESTORATION SHALL BE COMPLETE BY NOVEMBER 15th OF THAT CALENDAR YEAR. FOR SANITARY SEWER INSTALLED, TESTED, AND ACCEPTED AFTER NOVEMBER 15TH OF ANY CALENDAR YEAR, RESTORATION SHALL BE COMPLETE BY MAY 15th OF THE NEXT CALENDAR YEAR. ALL SOIL AREAS DISTURBED BY THE CONTRACTOR SHALL BE TOPSOILED, SEEDED AND MULCHED. COST TO BE INCLUDED IN THE UNIT PRICE BID FOR EACH ITEM OF AFFECTED WORK. TOPSOIL, SEEDING AND MULCHING SHALL NOT BE A SEPARATE PAY ITEM. THIS INCLUDES BACKFILLING, SEEDING AND MULCHING ALONG THE EDGE OF ALL PAVEMENT RESTORATION. CONTRACTOR TO REPLACE ALL PAVEMENT MARKINGS. COST TO BE INCLUDED IN THE UNIT PRICE BID FOR PAVEMENT. CONTRACTOR TO USE HOT APPLIED JOINT CRACK SEALER ON ASPHALT PAVEMENT AT ALL ENDS AND INTERSECTIONS.

PROPOSED DRAINAGE RELIEF OUTLET

AT THE LOCATIONS SHOWN ON THE GRADING PLAN THE CONTRACTOR SHALL CUT A DRAINAGE RELIEF DITCH TO ALLOW THE STORM WATER RUNOFF TO ESCAPE THE GRAVEL DRIVE AND FLOW OVER THE GROUND SURFACE TO THE DITCHES OR SEDIMENT BASINS. THE CONTRACTOR SHALL DISTURB THE LEAST AMOUNT OF POSSIBLE TO CONTAIN THE RUNOFF. THE CONTRACTOR CAN USE JUTE MAT OR DUMP ROCK TO MAINTAIN THE SITE UNTIL THE VEGETATION IS ESTABLISHED. THESE AREAS ARE TO BE MONITORED DURING EVERY STORM EVENT AND MAINTAINED AS HUMANLY POSSIBLE.

CONSTRUCTION SPECIFICATIONS & STANDARDS

ALL CONSTRUCTION IS TO BE COMPLETED ACCORDING TO THE CURRENT CITY OF MASSILLON SPECIFICATIONS AND STANDARDS, AND THE LATEST EDITION OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS. WHEN A CONFLICT ARISES BETWEEN THE CITY OF MASSILLON AND ODOT'S STANDARDS, THE MORE STRINGENT STANDARD WILL BE USED AT THE DISCRETION OF THE CITY OF MASSILLON ENGINEER. THE CONTRACTOR SHALL FOLLOW ALL OSHA AND ADA REGULATIONS AND REQUIREMENTS.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE CONTRACTOR SHALL PROVIDE FOR THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT. A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE BID FORM FOR ITEM201SPEC, CLEARING AND GRUBBING. THIS ITEM SHALL INCLUDE ALL PROVISIONS AS SET FORTH IN THE 2008 ODOT SPECIFICATIONS. REMOVAL ITEMS MAY INCLUDE TREES, STUMPS, AND BRUSH AS DETERMINED BY THE CITY ENGINEER. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201SPEC, CLEARING AND GRUBBING.

CONTRACTOR'S EQUIPMENT – OPERATION STORAGE

A QUALIFIED FLAGGER SHALL BE EMPLOYED WHERE THE CONTRACTOR'S EQUIPMENT MUST MERGE WITH THE TRAFFIC STREAM. THE CONTRACTOR'S EQUIPMENT SHALL BE EQUIPPED WITH AT LEAST ONE AMBER FLASHING LIGHT. THE EQUIPMENT SHALL BE STORED AT A STORAGE AREA OUTSIDE THE R/W. THE LOCATION OF WHICH SHALL HAVE PRIOR APPROVAL OF THE ENGINEER. WHEN PARKING ALONG THE HIGHWAY, THE EQUIPMENT SHALL BE PLACED AND DELINEATED AS PER 614.03. NO EQUIPMENT SHALL BE PARKED IN THE MEDIAN OF THE HIGHWAY. ADEQUATE BARRICADE AND LIGHTS SHALL BE PLACED ON THE PAVEMENT SIDE OF THE EQUIPMENT TO IDENTIFY THE LIMITS OF THE EQUIPMENT. ALL OTHER EQUIPMENT, INCLUDING PRIVATE VEHICLES, SHALL BE STORED AT THE APPROVED CONTRACTOR'S STORAGE AREA. NO EQUIPMENT SHALL BE PARKED ON PRIVATE PROPERTY UNLESS PRIOR APPROVAL OF THE OWNER AND THE PROJECT ENGINEER/SUPERVISOR HAS BEEN GRANTED.

CONDITIONS OF WORK

ALL WORK PERFORMED UNDER THIS CONTRACT SHALL COMPLY WITH THE U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ACT, STATE, COUNTY, AND CITY OF MASSILLON LAWS AND REGULATIONS. ALL WORK, AT ALL TIMES SHALL BE SUBJECT TO OBSERVATION BY THE CITY OF MASSILLON ENGINEER AND/OR HIS REPRESENTATIVE. ALL WORK SHALL COMPLY WITH THE CONDITIONS OF THE CONTRACT DOCUMENTS AND OHIO EPA, AND STANDARDS OF THE CITY OF MASSILLON. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE, AND APPLICABLE CITY, COUNTY, STATE AND FEDERAL CODES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN SAFE AND SATISFACTORY ACCESS TO ALL ABUTTING PROPERTIES TO THE PROJECT SITE. ADJACENT ROADS SHALL BE MAINTAINED AND KEPT CLEAN OF MUD AND OTHER DEBRIS THAT MAY BE CAUSED BY TRAFFIC EXITING THE WORK SITE. THE CONTRACTOR SHALL COORDINATE AND PROVIDE FOR ALL NECESSARY TRAFFIC CONTROL. TRAFFIC CONTROL SHALL FOLLOW THE MORE STRINGENT GUIDELINES OF THE OWNER AT THE DESECRATION OF THE OWNER. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AND MAINTAIN FACILITIES FOR A CONSTRUCTION OFFICE, EMPLOYEE PARKING, AND EMPLOYEE SANITARY FACILITIES. ON STREET PARKING WILL NOT BE PERMITTED. THE CONTRACTOR SHALL PROVIDE FOR THE LAWFUL OFF-SITE DISPOSAL OF DEMOLITION DEBRIS AND CONSTRUCTION WASTE.

GRADING AND FILLING OPERATIONS

THE PLACEMENT OF COMPACTED AGGREGATE SHALL NOT EXTEND PAST THE EXISTING GRADED SHOULDERS. NO EXCAVATION, GRADING, OR FILLING OPERATIONS SHALL BE PERFORMED IN ANY WETLANDS OR STREAMS, UNLESS THE REQUIRED STATE AND/OR FEDERAL PERMITS HAVE BEEN OBTAINED IN ACCORDANCE WITH ALL APPLICABLE STATE AND/OR FEDERAL LAWS AND REGULATIONS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR STORE EQUIPMENT AND/OR MATERIALS IN ANY WETLANDS OR STREAMS.

PRESERVATION OF PROPERTY CORNERS AND SURVEY MARKERS

THE CONTRACTOR SHALL PRESERVE ALL CORNERSTONES, IRON PINS, CONCRETE MONUMENTS AND ANY TYPE OF LAND MONUMENT. HE SHALL HAVE ALL LAND MONUMENTS IN THE PROXIMITY OF THE WORK REFERENCED. HE SHALL REPLACE DESTROYED OR DAMAGED MONUMENTS AND SHALL FURNISH A CERTIFICATION BY AN OHIO REGISTERED SURVEYOR THAT THE MONUMENTS HAVE BEEN RESTORED.

REMOVAL AND RELOCATION OF EXISTING UTILITIES

THE CONTRACTOR IS REQUIRED TO COOPERATE WITH EACH RESPECTIVE UTILITY OWNER FOR THE REMOVAL AND RELOCATION OF ANY AND ALL UTILITIES THAT CREATE A CONFLICT WITH CONSTRUCTION OF THE PROJECT.

CROSSING OR CONNECTING TO EXISTING PIPES AND UTILITIES

WHERE THE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT. IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE CITY OF MASSILLON ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS. PAYMENT FOR THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 603 CONDUIT ITEM.

REVIEW OF SANITARY AND DRAINAGE FACILITIES

AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK SHALL BE COMPLETED BEFORE AND AFTER WORK HAS COMMENCED. FINAL ACCEPTANCE BY THE OWNER WILL NOT OCCUR UNTIL AFTER SAID INSPECTION. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE OBSERVATIONS SHALL BE PROVIDED IN WRITING BY THE CONTRACTOR TO THE CITY OF MASSILLON. ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE CITY OF MASSILLON. ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 603 CONDUIT ITEMS.

EXCAVATED MATERIAL

ALL EXCAVATED MATERIAL AND ALL MATERIAL USED IN CONSTRUCTION OF THE WORK SHALL BE PILED AND STORED IN A MANNER THAT WILL NOT ENDANGER THE WORK AND THAT WILL LEAVE DRIVEWAYS OR OTHER CONTROLS UNOBSTRUCTED AND ACCESSIBLE WHILE THE WORK IS TO BE COMPLETED. SATISFACTORY PROVISIONS SHALL BE MADE FOR STREET DRAINAGE, AND NATURAL WATERCOURSES SHALL NOT BE OBSTRUCTED. DURING THE PROGRESS OF THE WORK, ALL MATERIAL PILES SHALL BE KEPT TRIMMED UP AND MAINTAINED IN A NEAT MANNER. ALL EXCAVATED WASTE MATERIAL SHALL BE REMOVED FROM THE PROJECT SITE, AS DIRECTED BY THE ENGINEER. THE WASTE SITE IS TO BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE CITY, UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS ALONG WITH A LETTER FROM THE PROPOSED WASTE SITE OWNER SITE, AS DIRECTED BY THE ENGINEER. THE WASTE SITE IS TO BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE CITY, PERMITTING SUCH AND HOLDING THE CITY HARMLESS.

ITEM 659, TOPSOIL, SEEDING AND MULCHING

ITEM 659 SHALL BE APPLIED TO ALL EXPOSED SOIL AREAS DISTURBED DURING CONSTRUCTION. SUCH AS SPECIFIED IN ITEM 659 AND IS NOT LIMITED TO JUST TOPSOIL, SEEDING AND MULCHING. THE CITY SHALL APPROVE SEED MIX PRIOR TO APPLICATION TO BE USED THROUGHOUT CONSTRUCTION LIMITS.

EXISTING DATA

EACH CONTRACTOR SHALL VISIT THE SITE PERSONALLY TO ASCERTAIN THE NATURE OF THE WORK AND BECOME THOROUGHLY FAMILIARIZED WITH THE SITE PRIOR TO BID SUBMISSION. EXISTING STRUCTURES, GRADES, PIPING, ETC. ARE INDICATED IN APPROXIMATE LOCATION ON THE PLAN. INFORMATION SHOWN IS NOT GUARANTEED TO BE CORRECT AND COMPLETE. THE DATA SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR. THE EXISTENCE OF FACILITIES ABOVE OR BELOW GROUND, WHICH MAY NOT BE SHOWN, WILL NOT BE A BASIS FOR A CLAIM FOR EXTRA WORK. EXISTING UNDERGROUND UTILITIES SHOWN ARE RECORDS PROVIDED BY UTILITY COMPANIES AND ARE APPROXIMATE ONLY. SERVICE LATERALS ARE NOT SHOWN. IT IS THE RESPONSIBILITY OF CONTRACTOR TO NOTIFY THE CITY, PRIOR TO BID OPENING OF NON-CONFORMING OR CONFLICTING INFORMATION.

WORKING AREA

NO EXCAVATION WITH SIDE SLOPES STEEPER THAN 2:1 AND/OR DEEPER THAN 2' WILL BE PERMITTED. OPEN CASTINGS AND PIPES SHALL BE LEFT SECURED WHEN THE SITE IS UNATTENDED BY THE CONTRACTOR. THE CONTRACTOR SHALL SECURE ALL SUCH EXCAVATIONS, OPEN CASTINGS AND PIPES AGAINST UNAUTHORIZED ENTRY COVERING WITH STEEL PLATES, TEMPORARY BACK FILLING, FENCING AND SECURITY SERVICES SHALL BE INCLUDED IN THE PRICE BID FOR THE WORK.

CONDITIONS OF WORK

ALL WORK PERFORMED UNDER THIS CONTRACT SHALL COMPLY WITH THE U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ACT, STATE, COUNTY, AND CITY OF MASSILLON LAWS AND REGULATIONS. ALL WORK, AT ALL TIMES SHALL BE SUBJECT TO OBSERVATION BY THE OWNER AND/OR ENGINEER. ALL WORK SHALL COMPLY WITH THE CONDITIONS OF THE CONTRACT DOCUMENTS, OHIO EPA, AND STANDARDS OF THE CITY OF MASSILLON. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE, AND APPLICABLE CITY, COUNTY, STATE AND FEDERAL CODES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN SAFE AND SATISFACTORY ACCESS TO ALL ABUTTING PROPERTIES TO THE PROJECT SITE. ADJACENT ROADS SHALL BE MAINTAINED AND KEPT CLEAN OF MUD AND OTHER DEBRIS THAT MAY BE CAUSED BY TRAFFIC EXITING THE WORK SITE. THE CONTRACTOR SHALL COORDINATE AND PROVIDE FOR ALL NECESSARY TRAFFIC CONTROL. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH CURRENT CITY OF MASSILLON RULES AND REGULATIONS AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AND MAINTAIN FACILITIES FOR A CONSTRUCTION OFFICE, EMPLOYEE PARKING, AND EMPLOYEE SANITARY FACILITIES. ON STREET PARKING WILL NOT BE PERMITTED. THE CONTRACTOR SHALL PROVIDE FOR THE LAWFUL OFF-SITE DISPOSAL OF DEMOLITION DEBRIS AND CONSTRUCTION WASTE.

CONCRETE REMOVAL

ALL EXISTING CONCRETE INCLUDING CURBS, DRIVES, AND BASE ETC. WITHIN WORK LIMITS SHALL BE REMOVED AND PAID FOR UNDER: ITEM 203 EXCAVATION INCLUDING ROADWAY

ITEM 614SPEC MAINTAINING TRAFFIC

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING AND MAINTAINING SAFE AND EFFECTIVE TRAFFIC CONTROL 24 HOURS A DAY FOR THE DURATION OF THIS PROJECT. ALL TRAFFIC CONTROL DEVICES (PAVEMENT MARKINGS, SIGNS, BARRELS, CONES, ETC.) SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR.

GENERAL NOTES AND SPECIFICATIONS

THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL PLAN AND ELEVATION DIMENSIONS OF THE VARIOUS WORK ITEMS ON THIS PROJECT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A VALID STATE CONTRACTOR'S LICENSE AND PAYING ALL STATE AND COUNTY TAXES AS APPLICABLE.

THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE ON THE PROJECT FOR THE COMPLETE DURATION.

THE CONTRACTOR SHALL PROVIDE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AND OTHER ACTIONS AS REQUIRED BY LOCAL AND STATE REGULATIONS OR REQUESTED BY ENGINEER. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING OR MODIFYING SEDIMENT CONTROL MEASURES DURING CONSTRUCTION IN ORDER TO PREVENT EROSION.

ALL EXCAVATION AND FILL PLACEMENT SHALL BE TO THE LINES AND GRADES AS SHOWN ON THE DRAWINGS. CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL LINES AND GRADES. EXACT CUT AND FILL LIMITS MAY NEED TO BE MODIFIED IN THE FIELD DURING CONSTRUCTION. THE ENGINEER WILL WORK CLOSELY WITH THE CONTRACTOR TO MAKE THESE MODIFICATIONS.

ALL EXCAVATIONS SHALL BE PERFORMED IN A MANNER AS TO NOT CREATE UNSTABLE CONDITIONS. SHOULD UNSTABLE CONDITIONS OCCUR DUE TO CONTRACTOR NEGLIGENCE, THE UNSTABLE CONDITIONS SHALL BE REPAIRED AND REGRADED AT NO EXPENSE TO THE OWNER. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL CUT AND/OR FILL AREAS.

GRADING SHALL NOT BE DONE IN SUCH A WAY TO DIVERT WATER ONTO PROPERTY OF ANOTHER LAND OWNER. EXCAVATION OR FILL SHALL NOT ENDANGER ADJOINING PROPERTY.

ALL UNSUITABLE AND/OR EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF ON SITE AS DIRECTED BY THE ENGINEER.

ALL DISTURBED AREAS MUST BE SEEDED AND MULCHED AFTER CONSTRUCTION HAS BEEN COMPLETED.

GRADE ELEVATIONS REFLECT FINISHED GRADE. THE CONTRACTOR MUST SUBTRACT THE PAVEMENT THICKNESS TO DETERMINE THE SUBGRADE ELEVATION OF EACH CROSS SECTION.

IN THE EVENT AN ERROR WITH THE PLANS SEEMS APPARENT, THE MATTER MUST BE TAKEN UP WITH THE ENGINEER FOR CAREFUL REVIEW BEFORE PROCEEDING WITH CONSTRUCTION.

THE CONTRACTOR SHALL COORDINATE UTILITY TIE-INS WITH THE APPROPRIATE UTILITY PROVIDER.

THE EARTHWORK IS BALANCED WITHIN THE SITE, HOWEVER, A SITE HAS BEEN IDENTIFIED ON THE ADJACENT PROPERTY FOR THE USE OF STOCKPILING EXCESS TOPSOIL. CONTRACTOR AND SUBCONTRACTORS MAY UTILIZE STOCKPILE FOR REDISTRIBUTION AS NEEDED.

ALL LOCAL, STATE, AND FEDERAL PERMITS AND APPROVALS MUST BE OBTAINED PRIOR TO CONSTRUCTION OCCURRING. THE APPROVALS AND PERMITS WILL BE OBTAINED BY THE OWNER.

ALL PIPES AND STRUCTURE INVERT AND RIM ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLATION. ANY DISCREPANCIES NOTED SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.

ALL QUALITY CONTROL TESTING AND INSPECTION WILL BE PROVIDED BY THE CONTRACTOR.

EACH LAYER OF FILL OR BACKFILL SHALL BE TESTED FOR COMPACTION TO DETERMINE COMPLIANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. COMPACTION TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

OTHER CONTRACTORS WILL BE WORKING IN THIS AREA. DIRECT COORDINATION BETWEEN CONTRACTORS WILL BE NECESSARY TO DETERMINE STORAGE AREAS AND LIMITS OF WORK.

THIS PLAN DOES NOT GUARANTEE THE EXISTENCE OR LOCATION OF ANY UNDERGROUND UTILITIES. PRIOR TO ANY CONSTRUCTION, CONTRACTOR SHALL CONTACT ALL PUBLIC AND PRIVATE UTILITY AGENCIES FRANCHISED TO SERVE THE PROJECT AREA AND DETERMINE THE EXISTENCE AND/OR LOCATION OF ALL UNDERGROUND UTILITIES.

IN THE EVENT THAT AN ERROR WITH THE PLANS SEEMS APPARENT, THE MATTER MUST BE TAKEN UP WITH THE ENGINEER FOR CAREFUL REVIEW BEFORE PROCEEDING WITH CONSTRUCTION.

ALL EXCAVATION IS UNCLASSIFIED. THERE IS NO ROCK CLAUSE.

SOFT TO MEDIUM STIFF SOILS SHOULD BE COMPLETELY UNDERCUT IN FILL AREAS PRIOR TO PLACEMENT OF EMBANKMENT FILL.

MAXIMUM FILL AND CUT SLOPES SHALL BE 2:1 UNLESS GEOTECHNICAL ENGINEER RECOMMENDS OTHERWISE DURING CONSTRUCTION. SLOPES WITH HEIGHTS GREATER THAN 50' SHALL CONTAIN A 20' BENCH AT MID HEIGHT. SLOPES WITH HEIGHTS GREATER THAN 80' SHALL CONTAIN TWO (2) BENCHES WITH WIDTHS OF 20' EACH. MAXIMUM SLOPE HEIGHT IS 100'.

ADEQUATE DRAINAGE PROVISIONS SHOULD BE MADE TO DRAIN EXISTING DRAINAGE AREAS THAT ARE TO BE FILLED UPON. EXCAVATED ROCK MAY BE UTILIZED TO FORM "ROCK CORE DRAINS" AS DIRECTED BY THE ENGINEER.

THE FILL MATERIAL SHALL BE PLACED IN MAXIMUM 12" LIFTS IF LARGE COMPACTION EQUIPMENT IS USED.

BAKER HUGHES FOR CROSSLAND CONSTRUCTION MASSILLON, OHIO STARK COUNTY GENERAL NOTES		THRASHER ENGINEERING PHONE (330) 491-8170 CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES 4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718 (FAX) (330) 491-8342		SURVEY DATE: _____ SCALE: 1"=100' SURVEY BY: _____ FIELD BOOK No.: _____ PROJECT No. _____						DRAWN: CMK DATE: 01/14/13 3 CMK 3-08-13 Per City of Massillon Comments CHECKED: SDH DATE: 01/21/13 2 SDH 1-28-13 Per City of Massillon Comments APPROVED: DATE: _____ 1 SDH 1-05-13 ADDITIONAL 2' FORCE MAIN FOR FUTURE GROWTH OF SITE LAYOUT TAB. 13 NO. _____ DATE _____ DESCRIPTION					
SHEET No. 13				THE INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF THRASHER ENGINEERING INC. REPRODUCTION OF THESE DOCUMENTS IN WHOLE OR IN PART, FOR ANY REASON WITHOUT PRIOR WRITTEN PERMISSION, IS STRICTLY PROHIBITED. COPYRIGHT © 2011 THRASHER ENGINEERING INC.											

SANITARY SEWER SPECIFICATIONS

SANITARY SEWER CONSTRUCTION PROPOSED FOR THIS PROJECT SHALL CONFORM TO THE LATEST CITY OF MASSILLON STANDARDS AND CONSTRUCTION AND MATERIALS SPECIFICATIONS, TEN STATE STANDARDS, AND THE LATEST EDITION OF THE ODOT CMS, OR MODIFIED BY THE CONTRACT DRAWINGS. IF A CONFLICT ARISES BETWEEN SAID STANDARDS IT SHALL BE AT THE DISCRETION OF THE CITY OF MASSILLON ENGINEER AS TO WHICH STANDARD SHALL GOVERN. THE PROJECT CONTRACT DRAWINGS SHALL GOVERN UNLESS NOTED OTHERWISE. SANITARY GRAVITY SEWER PIPE AND FITTINGS SHALL BE PVC SDR 35 CONFORMING TO ASTM D-3034 UNLESS OTHERWISE NOTED. PVC COMPOUNDS SHALL CONFORM TO ASTM D-1784. PVC PIPE AND FITTINGS SHALL HAVE BELL AND SPIGOT TYPE JOINTS CONFORMING TO ASTM D-3212 AND GASKETS CONFORMING TO ASTM F-477 BACKFILL IN SEWER TRENCHES SHALL CONFORM TO ODOT ITEM 603.10 AND BE PLACED IN LAYERS SUFFICIENT TO MEET THE COMPACTION REQUIREMENT OF 100% OF MAXIMUM LABORATORY DRY DENSITY PER ASTM D-698 AND THOROUGHLY COMPACTED WITH MACHINE MOUNDED COMPACTION EQUIPMENT. THE PLACING OF BACKFILL MATERIAL SHALL BE CONTINUED UNTIL THE TRENCH IS ENTIRELY FILLED AND COMPACTED WITH THE APPROVED GRANULAR MATERIAL TO THE GRADE CALLED FOR ON THE CONTRACT DRAWINGS. EXCAVATED MATERIAL CONFORMING TO ODOT ITEM 203 SHALL BE USED FOR BACKFILLING EXISTING STRUCTURES (AFTER REMOVAL) ONLY. CRUSHED GRAVEL CONFORMING TO GRADATION REQUIREMENTS OF ODOT ITEM 304 OR APPROVED EQUAL AS SHOWN IN ODOT TABLE 703-1 SHALL BE USED FOR BACKFILLING ALL SEWER TRENCH AREAS SHOWN ON THE PLANS AND AS DIRECTED BY THE CITY OF MASSILLON ENGINEER. FLOODING, JETTING, OR PUDDLING OF BACKFILL MATERIAL WILL NOT BE PERMITTED UNLESS APPROVED BY THE CITY OF MASSILLON ENGINEER. COMPACTION TESTING OF THE BACKFILL BY A GEOTECHNICAL ENGINEER MAY BE REQUIRED BY THE OWNER AT THE EXPENSE OF THE CONTRACTOR. SANITARY SEWERS SHALL BE AIR TESTED FOR LEAKAGE AND MANDREL TESTED FOR DEFLECTION. THE MAXIMUM ALLOWABLE PIPE DEFLECTION SHALL BE 5% PRIOR TO FINAL PAYMENT FOR AND ACCEPTANCE OF SANITARY SEWER INSTALLATION. THE RESULTS OF THE AIR PRESSURE TESTS, TELEVISION TESTS AND MADREL TESTS SHALL BE FORWARDED TO THE CITY OF MASSILLON ENGINEER.

WATER (HYDROSTATIC) TEST

THE LEAKAGE EXCITATION OR INFILTRATION SHALL NOT EXCEED 100 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY [9L/(MM OF PIPE DIAMETER KM D)] FOR ANY SECTION OF THE SYSTEM. AN EXCITATION OR INFILTRATION TEST SHALL BE PERFORMED WITH A MINIMUM POSITIVE HEAD OF 2 FEET (0.6 M).

DEFLECTION TESTING

MAXIMUM ALLOWABLE PIPE DEFLECTION (REDUCTION IN VERTICAL INSIDE DIAMETER) SHALL BE 5%%. DEFLECTION TESTS OF PIPE SHALL BE PERFORMED NOT SOONER THAN 30 DAYS AFTER THE BACKFILL HAS BEEN PROPERLY PLACED AND BEFORE FINAL ACCEPTANCE. LOCATIONS WITH EXCESS DEFLECTION SHALL BE EXCAVATED AND REPAIRED BY RE-BEDDING OR REPLACEMENT OF THE PIPE AT THE CONTRACTOR'S EXPENSE. DEVICES FOR TESTING INCLUDE A DEFLECTION METER, OR PROPERLY SIZED (60, NO-GO) MANDREL OR SEWER BALL. THE DEFLECTION TESTING MUST BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES. FOR THE PURPOSE OF DEFLECTION MEASUREMENTS, THE BASE INSIDE PIPE DIAMETERS WITHOUT DEFLECTION ARE PROVIDED IN TABLE A. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE APPLIED TO THE BASE INSIDE DIAMETER IN DETERMINING THE MINIMUM PERMISSIBLE DIAMETER. IT MUST BE EMPHASIZED THAT TO INSURE ACCURATE TESTING, THE LINES MUST BE THOROUGHLY CLEANED.

TABLE A INSIDE DIAMETERS FOR DEFLECTION MEASUREMENTS OF ASTM D 3034 SDR 35 / SDR 21 PVC SEWER PIPE				
SIZE	SDR	AVG. O.D.	BASE I.D.	DEFLECTION MANDREL
6"	35	6.275	5.742	5.54
8"	35	8.400	7.665	7.28
10"	35	10.500	9.563	9.08
12"	35	12.500	11.361	10.79

TELEVISION TESTING

ALL SANITARY SEWERS, 8-INCH DIAMETER AND LARGER, MUST PASS AN INTERNAL TELEVISION INSPECTION. THE CONTRACTOR SHALL PROVIDE A COMPLETE INTERNAL INSPECTION DVD TO THE CITY OF MASSILLON ENGINEERING DEPARTMENT. THE RECORDING PROCEDURE SHALL BE IN ACCORDANCE WITH CITY OF MASSILLON ENGINEERING DEPARTMENT STANDARDS.

LEAKAGE TESTS

LEAKAGE TESTS SHALL BE PERFORMED WHICH MAY INCLUDE APPROPRIATE WATER OR LOW PRESSURE AIR TESTING. THE TESTING METHODS SELECTED SHOULD TAKE INTO CONSIDERATION THE RANGE IN GROUNDWATER ELEVATIONS DURING THE TEST AND ANTICIPATED DURING THE DESIGN LIFE OF THE SEWER COMPLETED AND ACCEPTED.

CLEAN WATER STATEMENT

ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

AIR TESTING AS PER ASTM F1417

AIR TESTING WILL BE CONDUCTED AS THE PROJECT IS BEING CONSTRUCTED. AT NO TIME WILL MORE THAN 900 FEET OF PIPE BE INSTALLED BEFORE AIR TESTING IS PERFORMED. SEWAGE WILL NOT BE DIVERTED TO ANY SECTION OF PIPE, REGARDLESS OF LENGTH, UNTIL ALL TESTING IS COMPLETED AND ACCEPTED. AFTER BACKFILLING A MANHOLE TO MANHOLE REACH OF SANITARY SEWER LINE, THE CONTRACTOR SHALL, AT HIS EXPENSE, CONDUCT THE LINE ACCEPTANCE TESTS. THE TESTS SHALL BE PERFORMED ACCORDING TO THE STATED PROCEDURES AND UNDER THE SUPERVISION OF THE CITY OF MASSILLON ENGINEER OR HIS REPRESENTATIVE. EQUIPMENT USED SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS AND BE APPROVED BY THE CITY OF MASSILLON ENGINEER:

1. PNEUMATIC PLUGS SHALL HAVE A SEALING LENGTH EQUAL TO OR A GREATER THAN THE DIAMETER OF THE PIPE BEING INSPECTED.
2. PNEUMATIC PLUGS SHALL RESIST INTERNAL TEST PRESSURES WITHOUT REQUIRED EXTERNAL BRACING OR BLOCKING.
3. ALL AIR USED SHALL PASS THROUGH A SINGLE CONTROL PANEL.
4. THREE INDIVIDUAL HOSES SHALL BE USED FOR THE FOLLOWING CONNECTIONS:
 - a. FROM CONTROL PANEL TO PNEUMATIC PLUGS FOR INFLATION.
 - b. FROM CONTROL PANEL TO SEALED LINE FOR INTRODUCING THE LOW PRESSURE AIR.
 - c. FROM SEALED LINE TO CONTROL PANEL FOR CONTINUALLY MONITORING AIR PRESSURE RISE IN THE SEALED LINE.

ALL PNEUMATIC PLUGS SHALL BE SEAL TESTED BEFORE BEING USED IN THE ACTUAL TEST INSTALLATION. ONE LENGTH OF PIPE SHALL BE LAID ON THE GROUND AN SEALED AT BOTH ENDS WITH THE PNEUMATIC PLUGS TO BE CHECKED. THE SEALED PIPE SHALL BE PRESSURED TO 5 PSIG. THE PLUGS MUST HOLD AGAINST THIS PRESSURE WITHOUT HAVING TO BE BRACED. AFTER A MANHOLE TO MANHOLE REACH OF PIPE HAS BEEN BACKFILLED AND CLEANED, AND THE PNEUMATIC PLUGS ARE CHECKED BY THE ABOVE PROCEDURE, THE PLUGS SHALL BE PLACED IN THE LINE AT EACH MANHOLE. LOW PRESSURE AIR SHALL BE SLOWLY INTRODUCED INTO THIS SEALED LINE UNTIL THE INTERNAL AIR PRESSURE REACHES APPROXIMATELY 4 PSIG. AT LEAST TWO MINUTES SHALL BE ALLOWED FOR THE AIR PRESSURE TO STABILIZE. WHEN THE PRESSURE HAS STABILIZED AND IS AT OR ABOVE 3.5 PSIG, THE AIR HOSE FROM THE CONTROL PANEL TO THE AIR SUPPLY SHALL BE DISCONNECTED. THE PORTION OF THE LINE BEING TESTED SHALL BE TERMED "ACCEPTABLE" IF THE TIME REQUIRED IN MINUTES FOR THE PRESSURE TO DECREASE FROM 3.5 TO 2.5 PSIG (GREATER THEN THE AVERAGE BACK PRESSURE OF ANY GROUNDWATER THAT MAY BE OVER THE PIPE) SHALL NOT BE LESS THAN THE TIME SHOWN FOR THE GIVEN DIAMETERS IN THE FOLLOWING TABLE:

PIPE DIAMETER IN.	MINIMUM TIME MINUTES	LENGTH FOR LONGER LENGTH, FT.	TIME FOR LONGER LENGTH, S	SPECIFICATION TIME LENGTH (L) SHOWN, MINUTES								
				100 FT.	150 FT.	200 FT.	250 FT.	300 FT.	350 FT.	400 FT.	450 FT.	
4	3:46	597	0.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	
6	5:40	398	0.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24	
8	7:34	298	1.520 L	7:34	7:34	7:34	7:36	7:36	8:52	10:08	11:24	
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48	
12	11:20	198	3.416 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	
15	14:10	159	6.342 L	14:10	14:10	17:46	22:15	26:42	31:09	35:36	40:04	
18	17:0	133	7.692 L	17:00	19:13	25:38	32:09	38:27	44:52	51:16	57:41	
21	19:50	114	10.470 L	19:50	26:10	36:54	43:37	52:21	XX:XX	69:48	78:31	
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	76:46	91:10	102:33	
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48	
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15	
33	31:10	72	25.852 L	49:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53	
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	170:29	205:07	230:46	

IN AREAS WHERE GROUND WATER IS KNOWN TO EXIST, THE CONTRACTOR SHALL INSTALL A 1/2 INCH DIAMETER CAPPED PIPE NIPPLE APPROXIMATELY 10 INCHES LONG, THROUGH THE MANHOLE WALL ON TOP OF ONE OF THE SANITARY SEWER LINES ENTERING THE MANHOLE. THIS SHALL BE DONE AT THE TIME THE SANITARY SEWER LINE IS INSTALLED. IMMEDIATELY PRIOR TO THE PERFORMANCE OF THE LINE ACCEPTABILITY TEST, THE GROUND WATER SHALL BE DETERMINED BY REMOVING THE PIPE CAP, BLOWING AIR THROUGH THE PIPE NIPPLE IN THE GROUND SO AS TO CLEAR IT, AND THEN CONNECTING A CLEAR PLASTIC TUBE TO THE NIPPLE. THE PLASTIC TUBE SHALL BE VERTICAL AND A MEASUREMENT OF THE HEIGHT, IN FEET OF WATER OVER THE INVERT OF THE PIPE, SHALL BE TAKEN AFTER THE WATER HAS STOPPED RISING IN THIS PLASTIC TUBE. THE HEIGHT, IN FEET OF WATER OVER THE INVERT OF THE PIPE, SHALL BE TAKEN AFTER THE WATER HAS STOPPED RISING IN THIS PLASTIC TUBE. AIR TEST PRESSURE IS TO BE INCREASED BY 0.433 PSI FOR EACH FOOT THE GROUND WATER IS ABOVE THE INVERT OF THE SEWER LINE BEING TESTED. THE ALLOWABLE DROP OF ONE POUND AND THE TIMING OF THE TEST REMAIN THE SAME. IF A LINE ACCEPTABILITY TEST IS BEING CONDUCTED ON MORE THAN ONE MANHOLE REACH OF PIPE, THE ENTIRE SECTION BEING TESTED SHALL MEET THE LINE ACCEPTABILITY REQUIREMENTS AS IF ONLY ONE (1) OF THE MANHOLE REACHES IN THE SECTION WERE BEING TESTED.

RELATION TO WATER MAINS

SEWERS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER.

NEGATIVE AIR PRESSURE (VACUUM) TESTING OF MANHOLES

AS PER ASTM C-1244

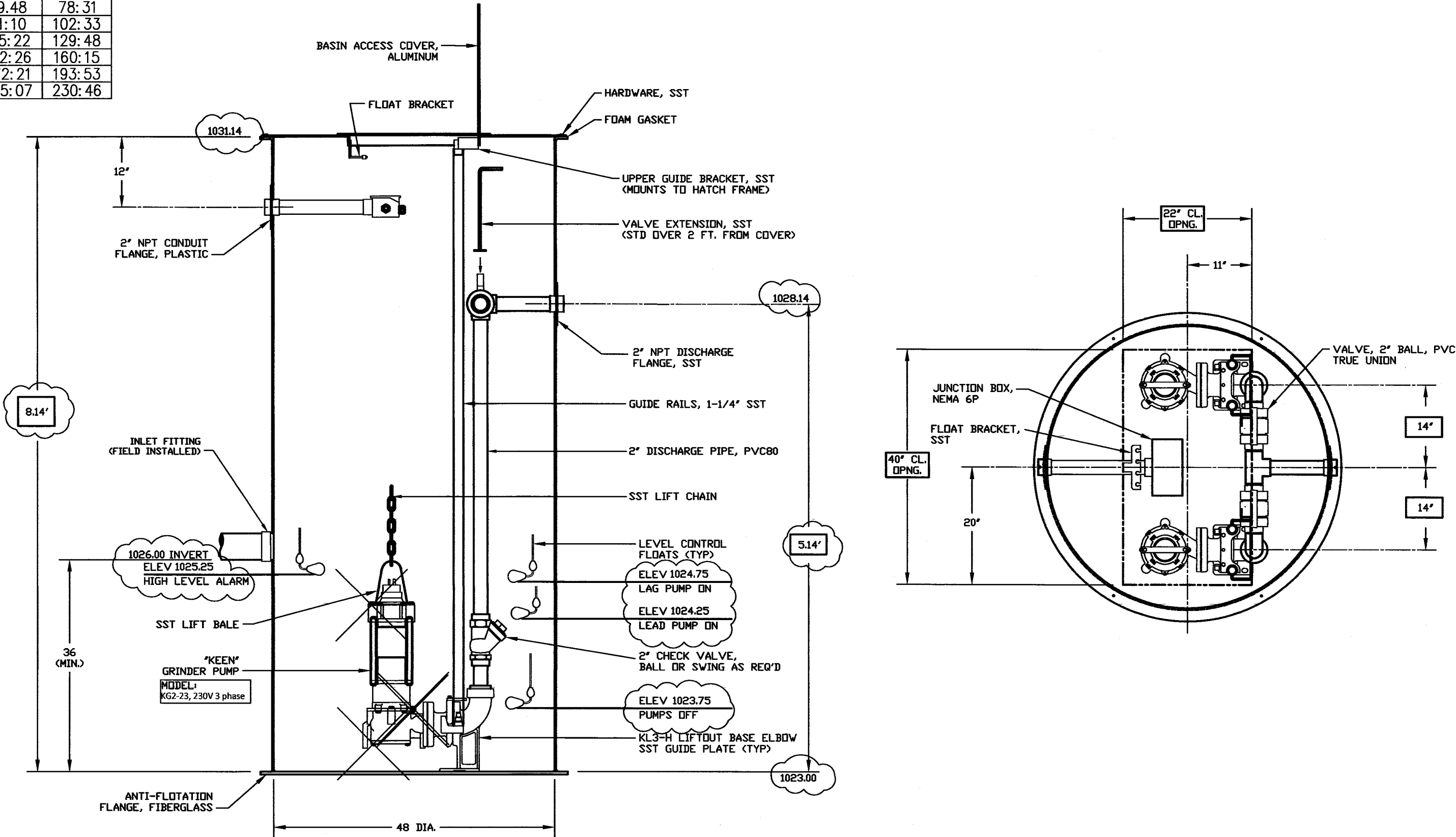
PREPARATION OF THE MANHOLE:

- A. ALL LIFT HOLES SHALL BE PLUGGED.
- B. ALL PIPES ENTERING THE MANHOLE SHALL BE TEMPORARILY PLUGGED, TAKING CARE TO SECURELY BRACE THE PIPES AND PLUGS TO PREVENT THEM FROM BEING DRAWN INTO THE MANHOLE.

PROCEDURE:

- A. THE TEST HEAD SHALL BE PLACED AT THE TOP OF THE MANHOLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- B. A VACUUM OF 10 IN. OF MERCURY SHALL BE DRAWN ON THE MANHOLE, THE VALVE ON THE VACUUM LINE OF THE TEST HEAD CLOSED, AND THE VACUUM PUMP SHUT OFF. THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP TO 9 IN OF MERCURY.
- C. THE MANHOLE SHALL PASS IF THE TIME FOR THE VACUUM READING TO DROP FROM 10 IN. OF MERCURY TO 9 IN. OF MERCURY MEETS OR EXCEEDS THE VALUES INDICATED IN TABLE BELOW.

DEPTH (FT)	MINIMUM TEST TIMES FOR MANHOLES									
	DIAMETER, IN.									
	30	33	36	42	48	54	60	66	72	
TIME, IN SECONDS										
8		11	12	14	17	20	23	26	29	33
10		14	15	16	21	25	29	33	36	41
12		17	18	21	25	30	35	39	43	49
14		20	21	25	30	35	41	46	51	57
16		22	24	26	34	40	46	52	58	62
18		25	27	30	38	45	52	59	65	70
20		28	30	35	42	50	53	65	72	81



SANITARY PUMP STATION

THE CONTRACTOR SHALL PROVIDE SHOP DRAINING FOR THE PROPOSED PUMP STATION TO THE ENGINEER FOR REVIEW AND APPROVAL. A COPY OF SAID SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY OF MASSILLON ENGINEER.

DESIGN CRITERIA:

- FORCE MAIN LATERAL DIAMETER 3"
- PUMP TYPE SUBMERSIBLE GRINDER
- LENGTH OF LATERAL(PUMP TO MANHOLE) = 2,960 L.F.
- DISCHARGE INVERT @ SANITARY MANHOLE =1010.35
- INTAKE INVERT AT THE PUMP = 1026.00
- BOTTOM OF THE PUMP STRUCTURE = 1023.00
- DESIGN FLOW = 5.83 GPM
- TOTAL DYNAMIC HEAD = 83.10

PUMP SHALL HAVE A MINIMUM AGGREGATE BASE OF 6". THE TANK SHALL BE AT LEAST 4' IN DIAMETER.

NOTES:

1. PROPOSED CLEAN-OUTS SHALL BE PLACED AT THE HIGH AND LOW POINTS OF THE FORCE MAIN. THEY SHALL CONSIST OF 3" AIR RELEASE VALVE. AIR RELEASE VALVE SHALL BE BROUGHT TO 1 FOOT BELOW GRADE. THE AIR RELEASE VALVE SHALL BE SLEEVED WITH A PIECE OF PVC FLUSH WITH THE CAP TO GRADE.
2. THE BALANCE OF THE AIR RELEASE VALVES SHALL BE SPACED EVERY 400 FEET.
3. MINIMUM DEPTH OF THE FORCE MAIN SHALL BE 4'-0".
4. THE CONTRACTOR SHALL PLACE A REDUCER AT THE OUTSIDE OF THE PUMP STATION TO CONNECT TO THE FORCE MAIN.
5. THE BASIS FOR THE PUMP STATION DESIGN IS:
 - 5.1. GRINDER FIBERGLASS BASIN PACKAGE.
 - 5.2. THE CONTRACTOR IS TO COORDINATE WITH THE OWNER FOR THE LOCATION OF THE SYSTEM MONITORING PANEL.
 - 5.3. PANEL-SHALL BE NEMA 4X FRP ENCLOSURE, AND INCLUDE ALARMS, LIGHTS, FUSES AND RELAYS.
 - 5.4. FLOAT SWITCHES - MERCURY
 - 5.5. BASIN REQUIREMENTS - THE CONTRACTOR IS TO INCLUDE A FIBERGLAS BASIN WITH ANTI-FLOAT PLATES. THE COVER IS TO BE ALUMINUM, COMPLETE SIDE RAIL SYSTEM MOUNTED ON BASIN. ALL GUIDES, BRACKETS WILL BE STAINLESS STEEL. GUIDES RAIL ARE 1" STAINLESS STEEL, SCHEDULE 10. 3" PVC DISCHARGE PIPING WITH BALL VALVE FOR SHUTOFF. EXTENSION HANDEL FOR SHUTOFF VALVE. CONDUIT FLANGE TO CONTROL BOX AND TO CONNECTION BOX. STAINLESS LIFTING CHAIN. AND ALL SUPPORT BRACKETS AND APPURTENANCES ARE TO BE INCLUDED.

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ENGINEERING
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BAKER HUGHES
FOR CROSSLAND CONSTRUCTION
MASSILLON, OHIO
STARK COUNTY
SANITARY NOTES



M.U.T.C.D.
R7-8

NOTES:

- PLACE BOTTOM OF SIGN 5'-0" ABOVE GRADE
- MOUNT ON STANDARD "T" RAIL W/BASE POST HAVING A MIN. WEIGHT OF 2.98 kg/m

HANDICAP SIGNAGE

- * EMPLOYEE PARKING SIGNS SHALL BE OF THE SAME CONFIGURATION AND SIZE THOUGH SHALL READ, "EMPLOYEE PARKING ONLY".

12" x 18" x 1/8" ALUMINUM HANDICAPPED PARKING SIGN TO READ "RESERVED PARKING" W/IDENTIFICATION SYMBOL, BOLT TO CHANNEL W/3/8" CADMIUM PLATED BOLTS, NUTS, AND WASHERS

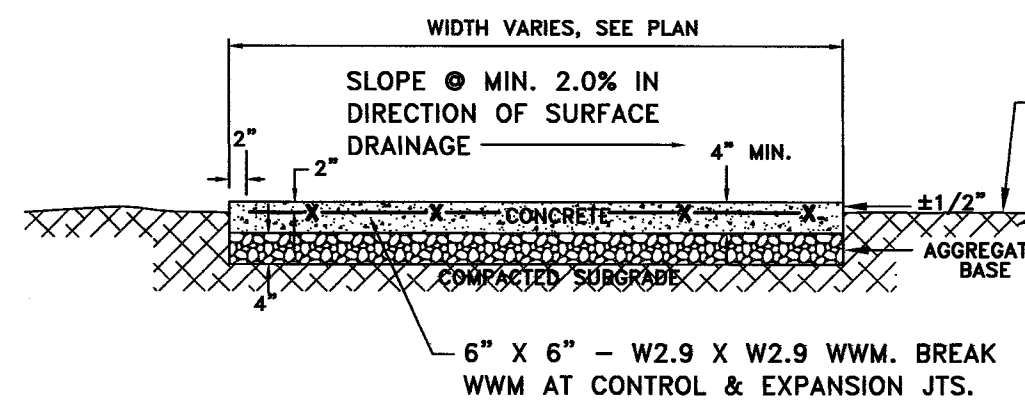
CHANNEL

PAVEMENT

SEE ANCHORING DETAIL FOR ANCHORING SPECIFICS.

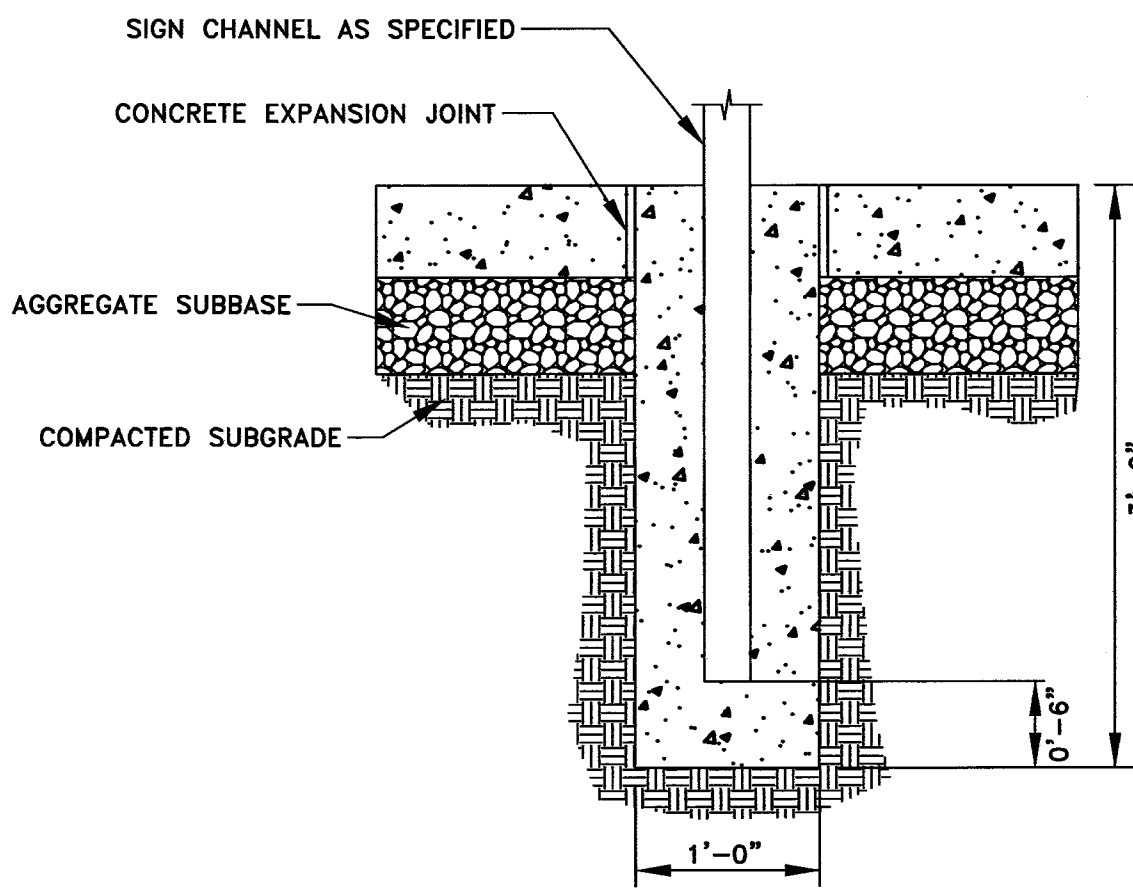
AT VAN ACCESSIBLE LOCATION ONLY

ACCESSIBLE PARKING SIGN

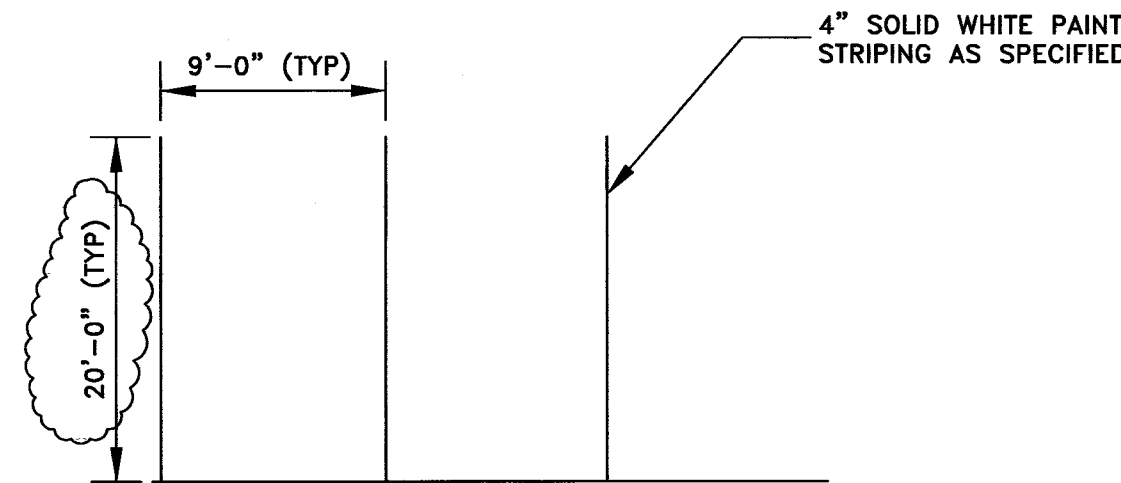


TYPICAL SIDEWALK SECTION

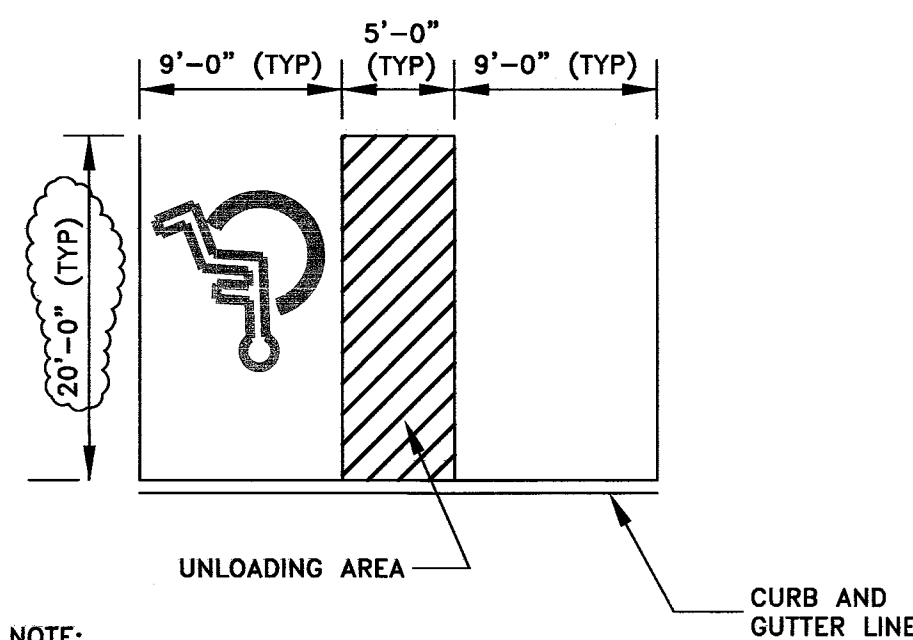
- NOTES:
- PLACE EXPANSION JOINT WHERE DIFFERENT SIDEWALKS ABUT. AND AGAINST ANY STRUCTURE
 - PLACE EXPANSION JOINTS 20'-0" O.C.
 - PLACE CONTRACTION JOINTS 5'-0" O.C.
 - FINISH SURFACE WITH A NON-SLIP BROOM SWEEP FINISH
 - BEVEL AT ENTRANCES TO MEET FINISHED FLOOR ELEVATION WITH A SLOPE NO GREATER THAN 1v:4h.



SIGN ANCHORING DETAIL



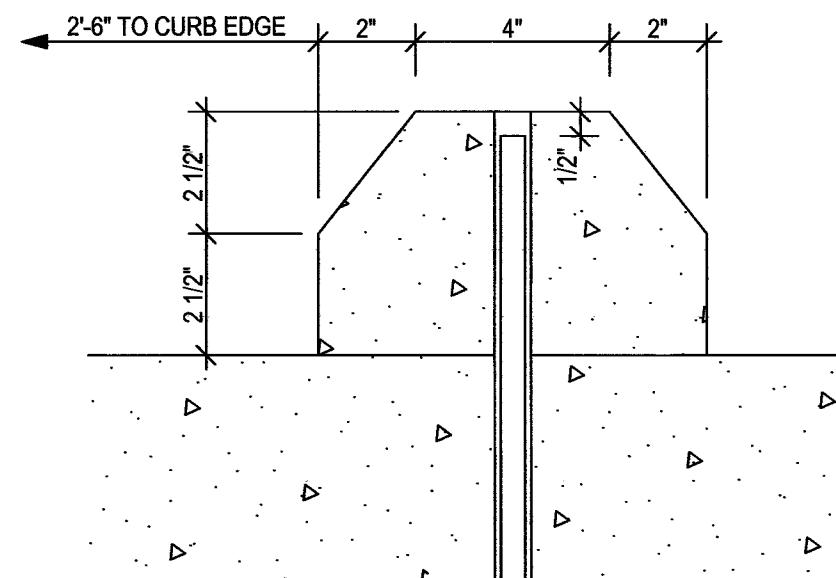
PARKING STALL PAINTING



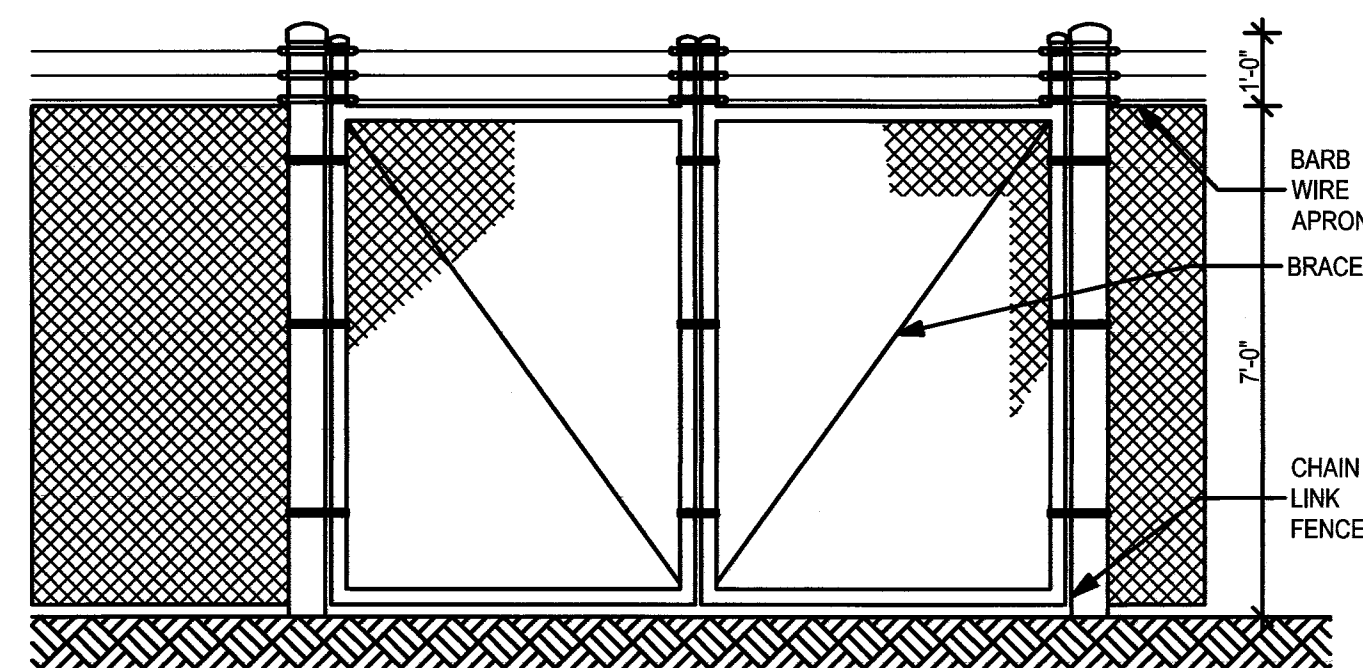
NOTE:

- SEE PLAN FOR CONFIGURATION OF AREA SHOWN
- TRAVEL LANES AND PARKING AREAS SHALL BE STRIPED WITH 4" SOLID WHITE PAINT AS SPECIFIED.

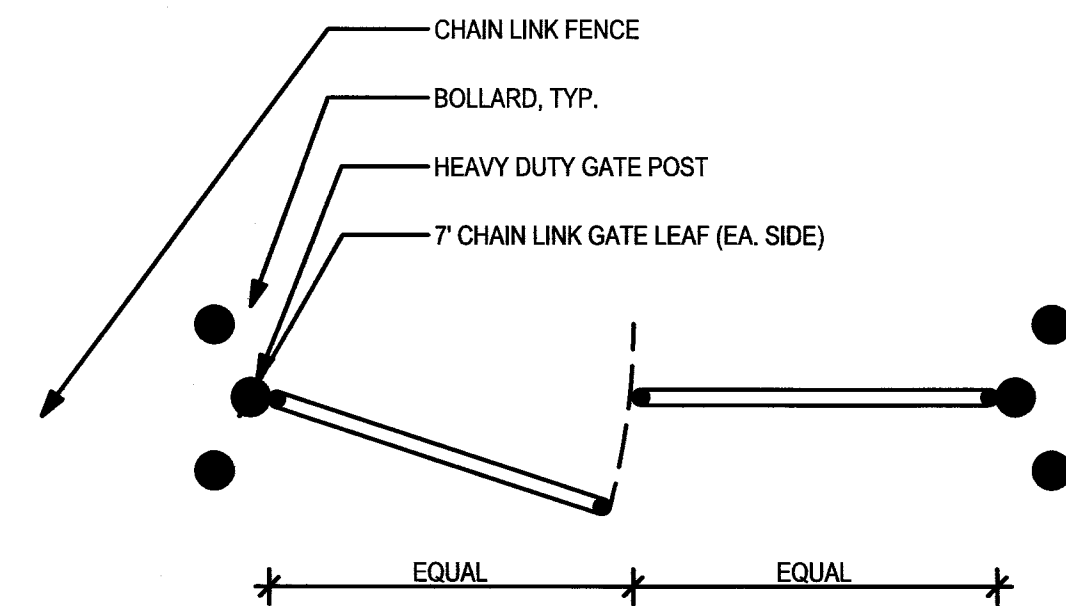
PARKING LOT STENCIL



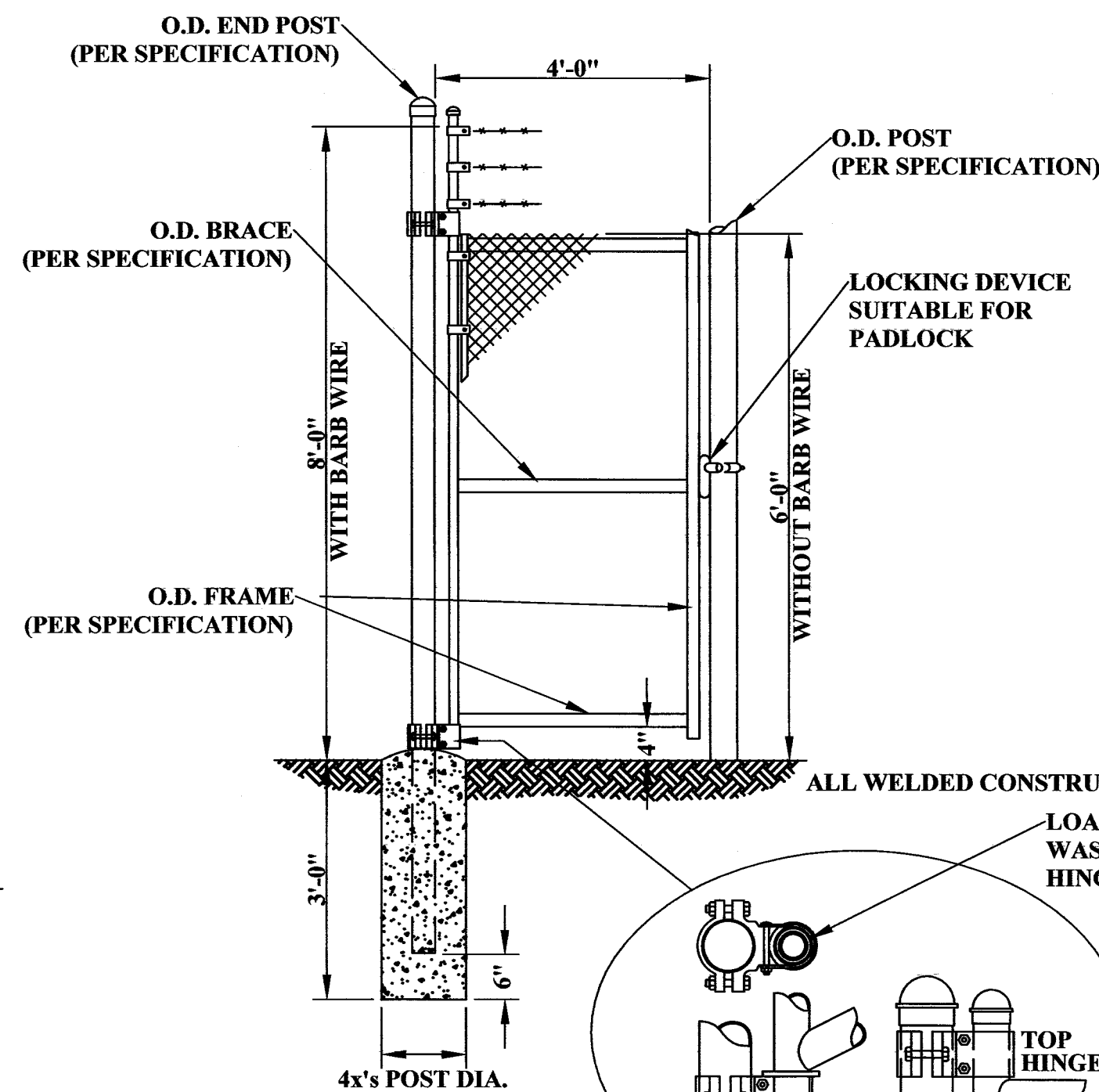
TYP. CONCRETE WHEEL STOP DETAIL



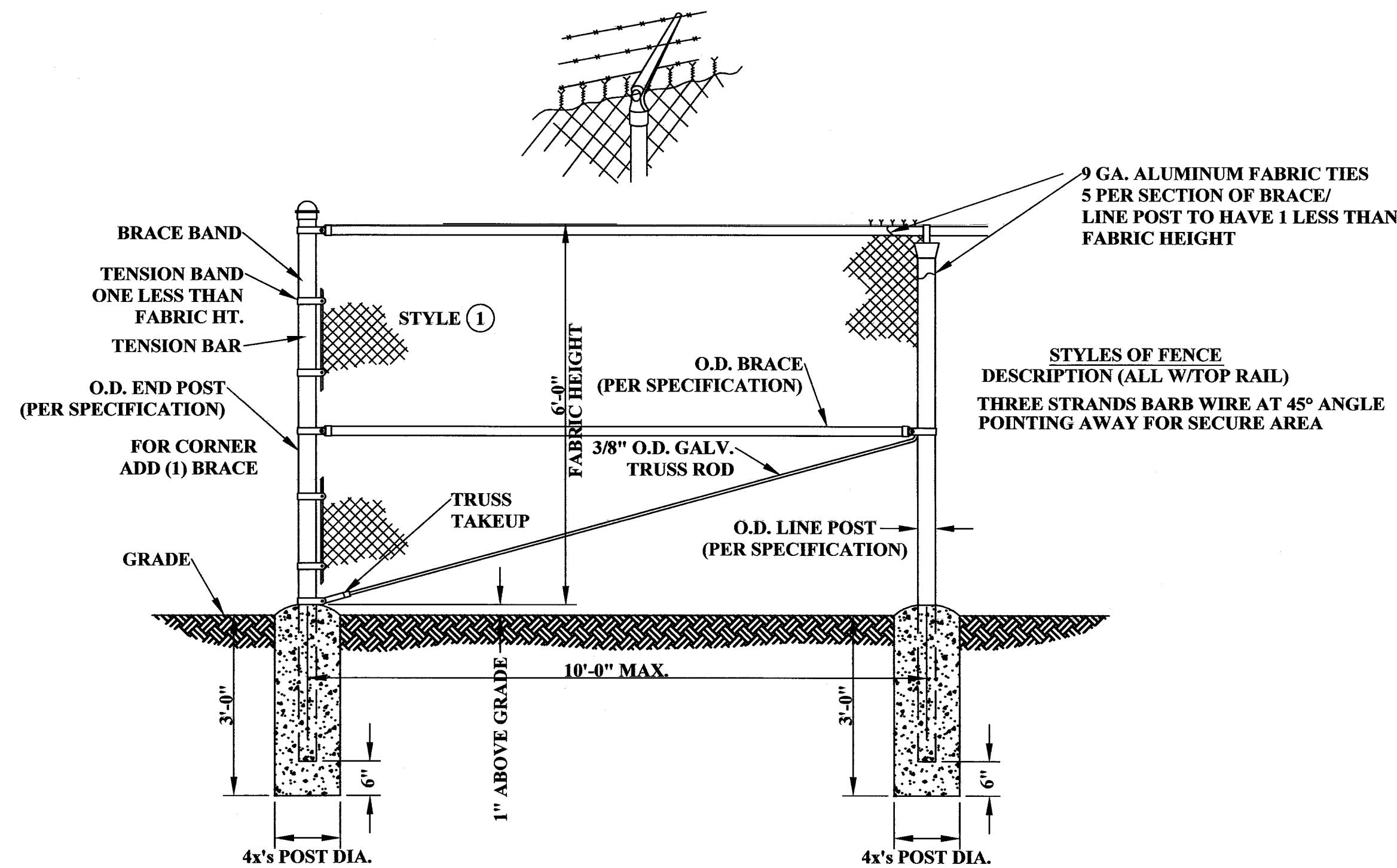
GATE ELEVATION



GATE DETAIL

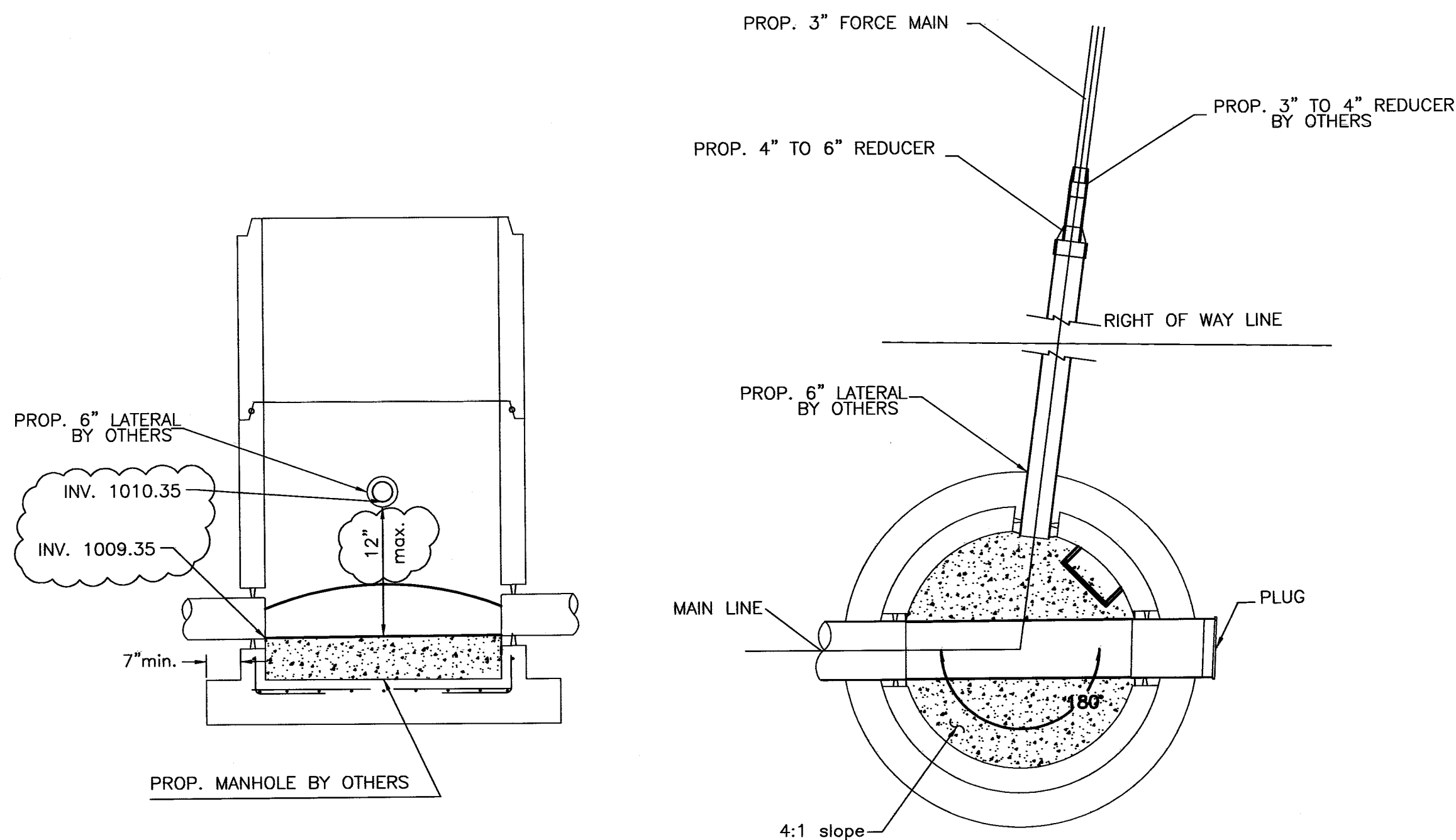
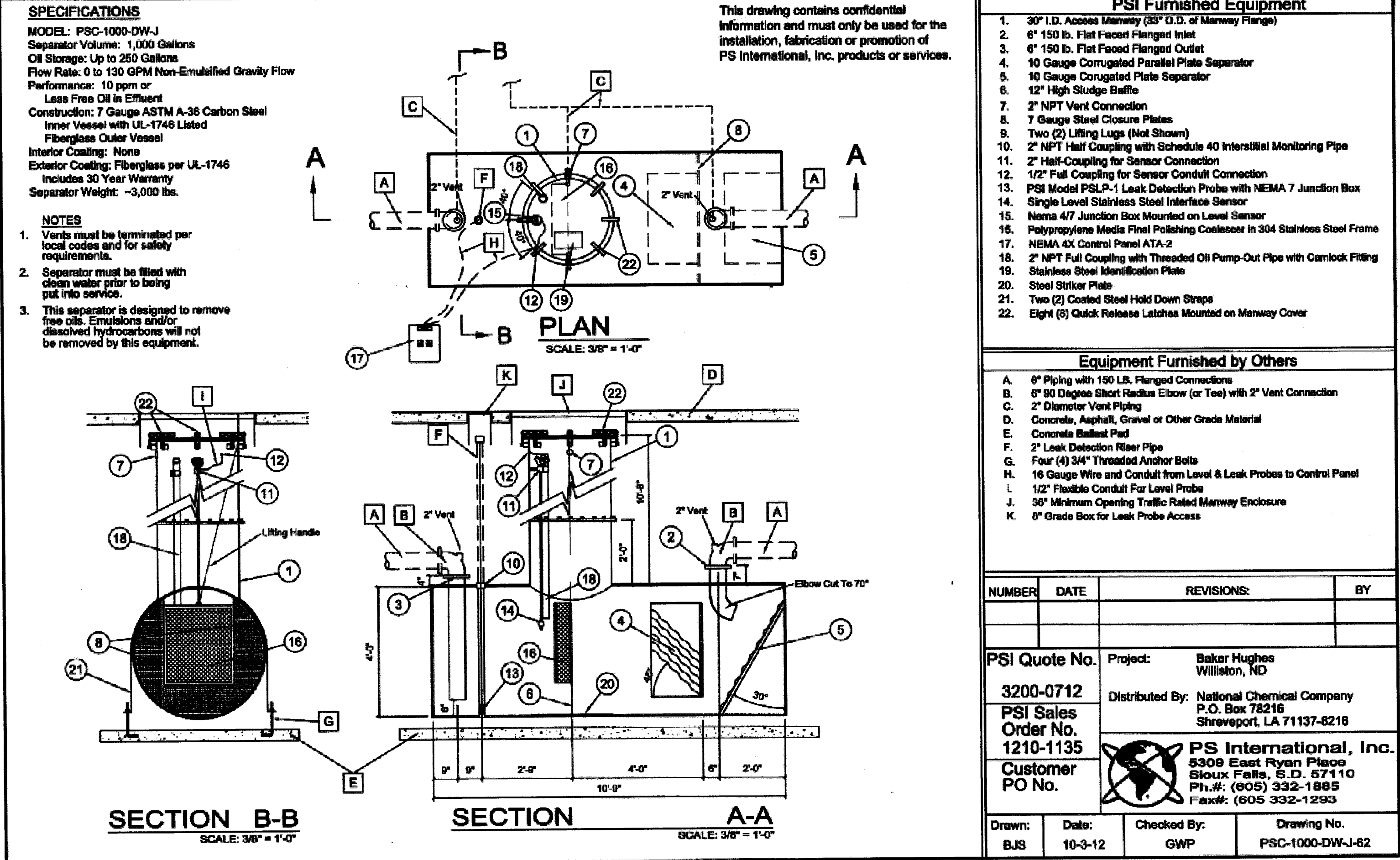
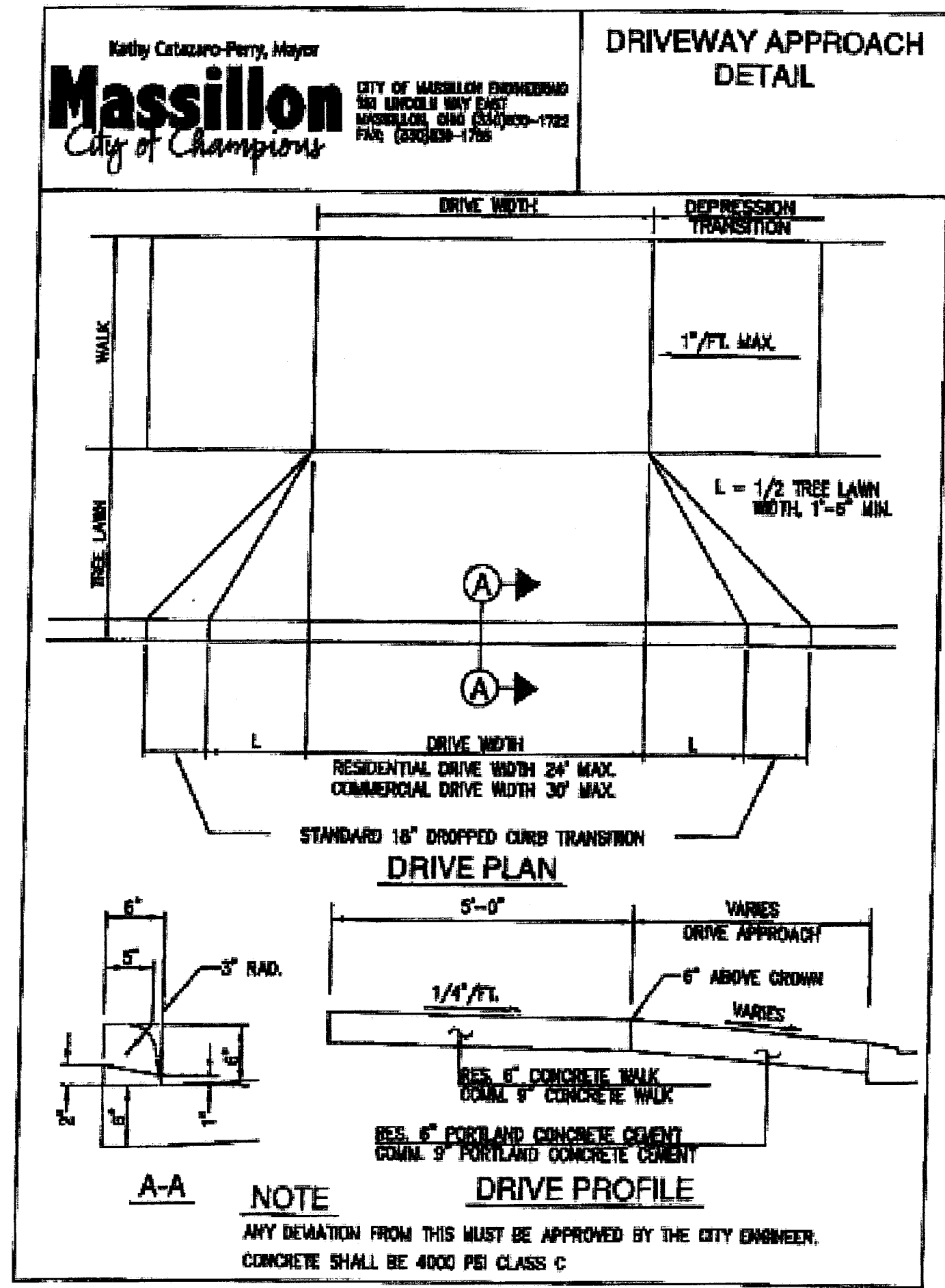


STANDARD SINGLE SWING GATE DETAIL



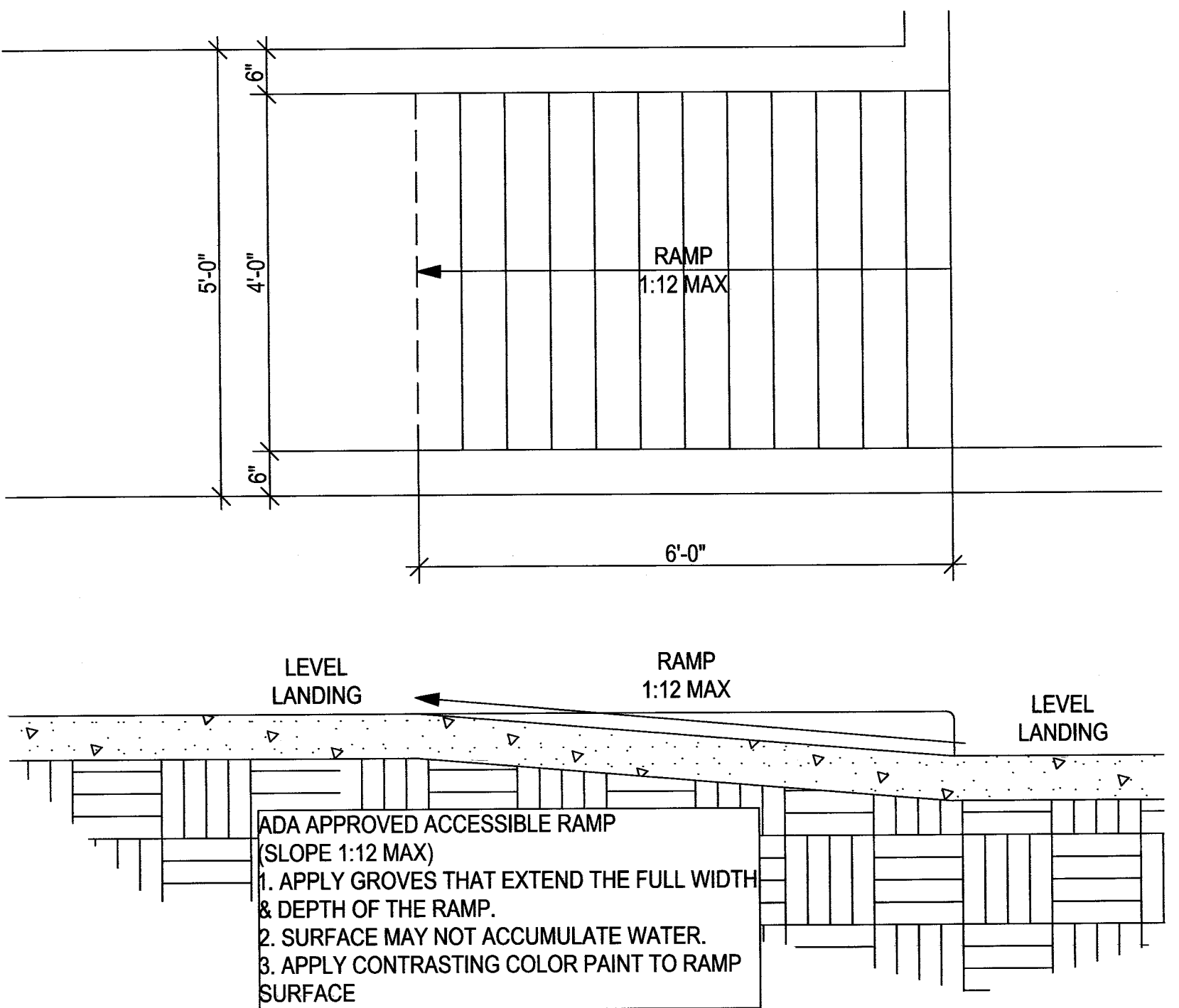
STANDARD FENCE DETAIL WITH TOP RAIL

SHEET No.		BAKER HUGHES FOR CROSSLAND CONSTRUCTION MASSILLION, OHIO STARK COUNTY SITE DETAILS		THRASHER ENGINEERING PHONE (330) 491-8170 (330) 491-8342 (FAX) CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES 4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718	
SURVEY DATE:		SCALE: 1"=100'		3	
SURVEY BY:		DRAWN: CMK		DATE: 07/14/13	
FIELD BOOK No.:		CHECKED: SDH		DATE: 07/25/13	
PROJECT No.		APPROVED:		DATE: 1	
		LAYOUT TAB: SHEET 15		NO. 1	
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DETAIL OF FORCE MAIN CONNECTION

THE CONTRACTOR IS TO CONNECT THE PROPOSED 3" FORCE MAIN AS SHOWN TO THE EXISTING 6" LATERAL PROVIDED BY OTHERS.



TYP. ADA RAMP DETAIL

SCALE: 1/2" = 1'-0"



EXIST. GRASS

3" MIN. TOP SOIL AND SEEDING

EXIST. GRASS

AGGREGATE BASE GRANULAR BACKFILL AS SPECIFIED

LASTIN D-2321 CLASSITEM 30.4 (No. 57 GRAVEL) BEDDING FOR FLEXIBLE PIPING

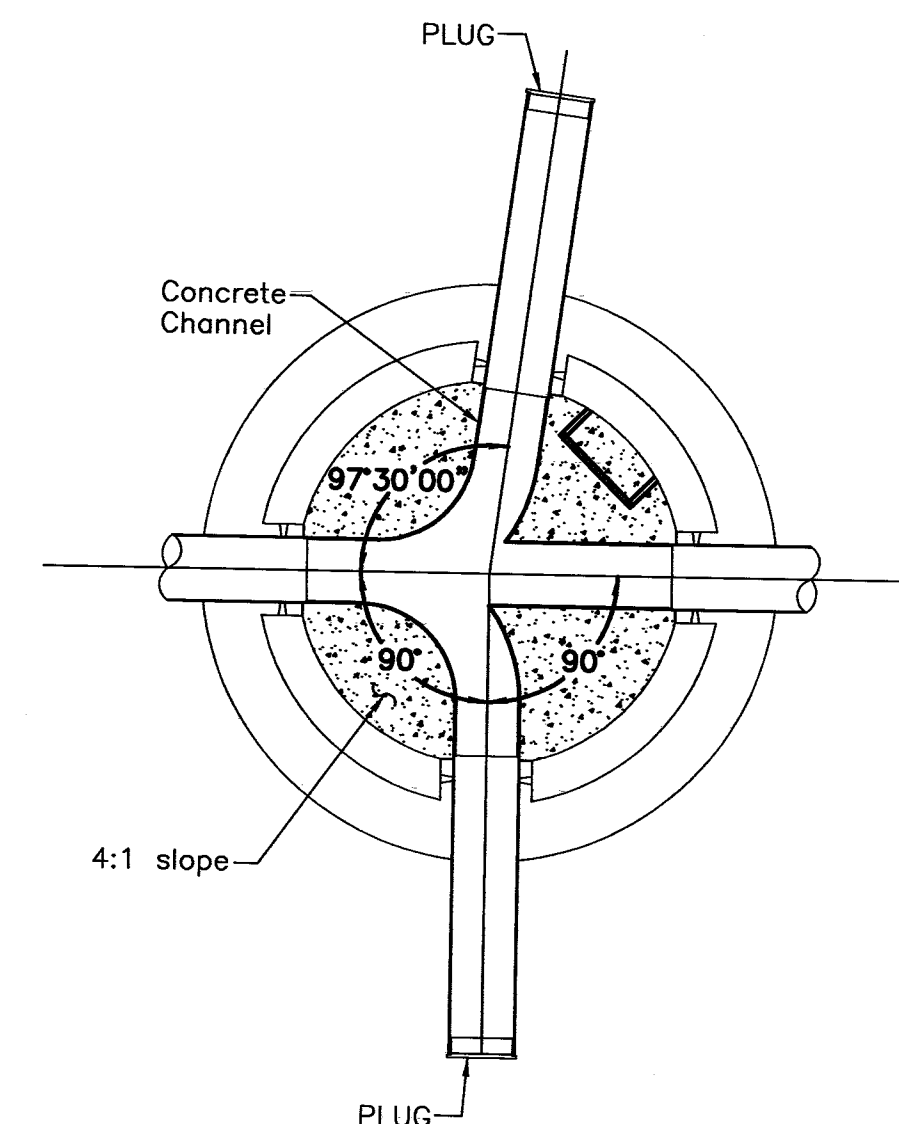
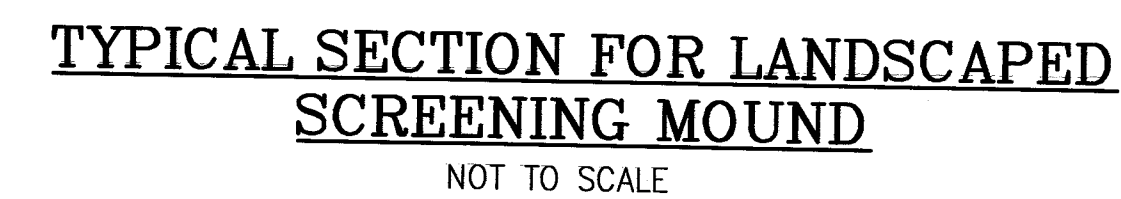
12"

TOP OF PIPE

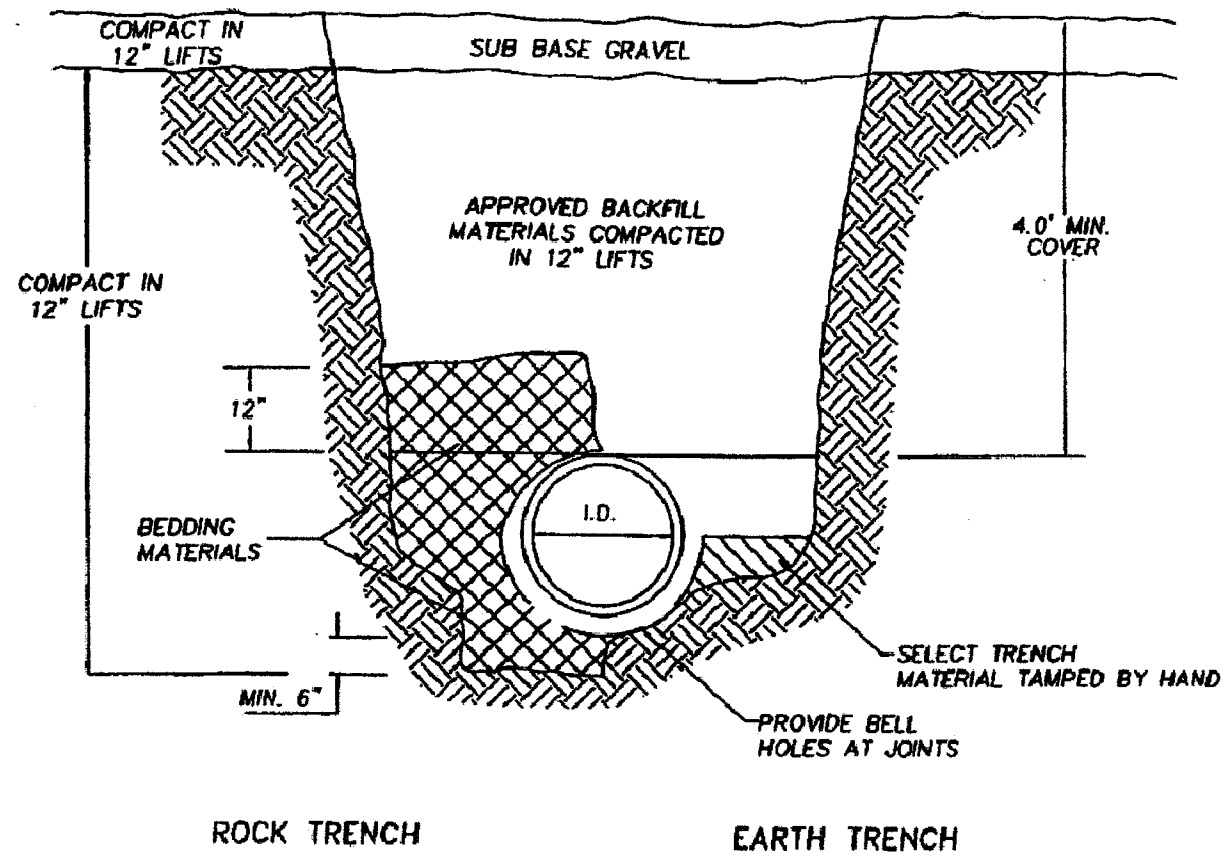
6" MIN

TRENCH WIDTH = I.D. PIPE + 2'0"

TRENCH DETAIL OUTSIDE ROADWAY
ALL MATERIALS AND LABOR INCLUDED IN ITEM 603



<p align="center">BAKER HUGHES FOR CROSSLAND CONSTRUCTION MASSILLON, OHIO STARK COUNTY SITE DETAILS</p>	<p align="center">THRASHER ENGINEERING</p> <p align="center">CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES</p> <p align="center">4150 BELDEN VILLAGE ST. - SUITE 101 - CANTON, OH 44718</p>		<p>SCALE: 1"=100'</p> <p>SURVEY BY: DRAWN: CLK DATE: 01/14/13 CHK: 3</p> <p>FIELD BOOK No.: CHECKED: SDH DATE: 01/27/13 PER CITY OF MASSILLON COMMENTS: 1-28-13</p> <p>PROJECT No.: APPROVED: DATE: 02-13 ADDITIONAL 2' FORCE MAIN FOR FUTURE GROWTH OF SITE</p> <p>1. LAYOUT DRAW. SHEET 16 NO. 501</p> <p>2. THE INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF THRASHER ENGINEERING, INC. FOR ANY REASON WITHOUT PRIOR WRITTEN PERMISSION, ITS REPRODUCTION OR THESE DOCUMENTS IN WHOLE OR IN PART, IS STRICTLY PROHIBITED.</p>			
	<p align="center">16</p>		<p align="center">SHEET No.</p>			



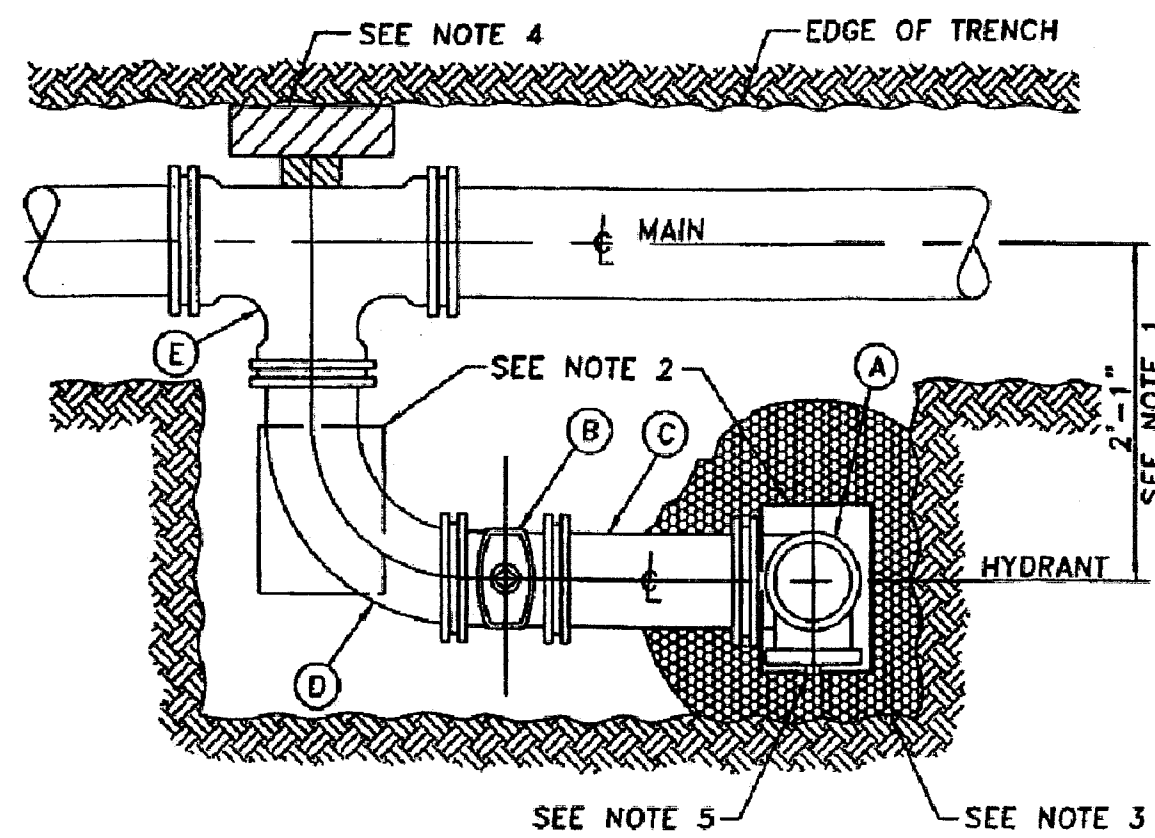
TRENCH DETAIL

NOT TO SCALE

NOTES

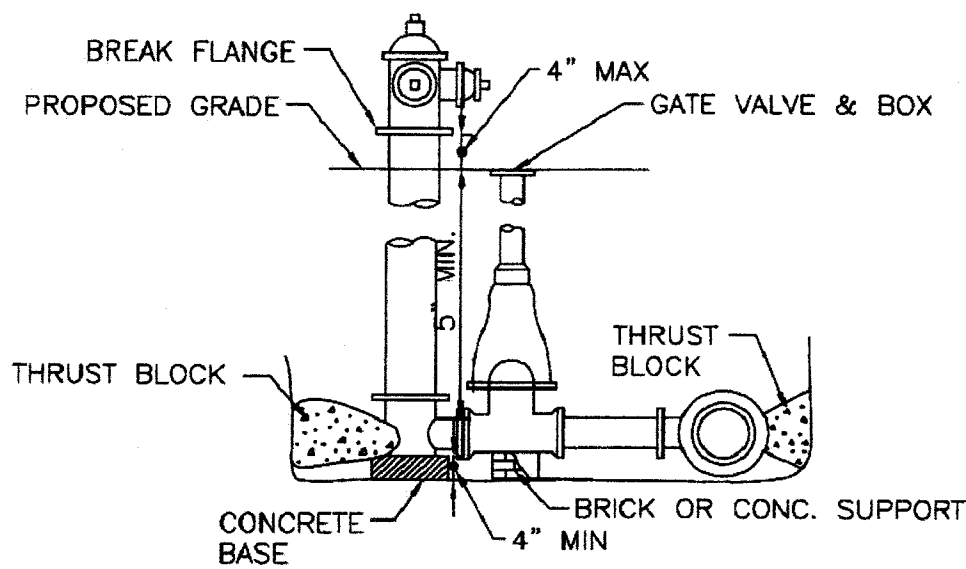
- THE DISTANCE FROM THE CENTERLINE OF MAIN TO THE CENTERLINE OF HYDRANT WILL BE 26" EXCEPT WHEN UNUSUAL CIRCUMSTANCES FROM 1' TO 10' MEASURABLE WHEN SUCH CIRCUMSTANCES OCCUR, THE LENGTH OF THE LEAD WILL BE NOTED ON THE DRAWINGS WITH THE STATIONING.
- SOLID CONCRETE BLOCK TO BE USED UNDER ALL TEES, BENDS AND BEHIND AND UNDER HYDRANT ELBOW.
- CRUSHED STONE FILL AROUND HYDRANT DRAIN AND TO A DEPTH OF 2'-0".
- SOLID CONCRETE BLOCK WITH OAK WEDGES. (BRACED AGAINST UNDISTURBED SOIL.)
- PUMPER NOZZLE FACING STREET.

ITEM	DESCRIPTION
A	HYDRANT ASSEMBLY AS APPROVED BY CONSUMERS OHIO WATER CO.
B	6" M.J. GATE VALVE, 3 PIECE WAKE BOX.
C	ANCHOR COUPLING (8"-1211)
D	ANCHOR ELBOW (8"-1218)
E	STANDARD M.J. TEE



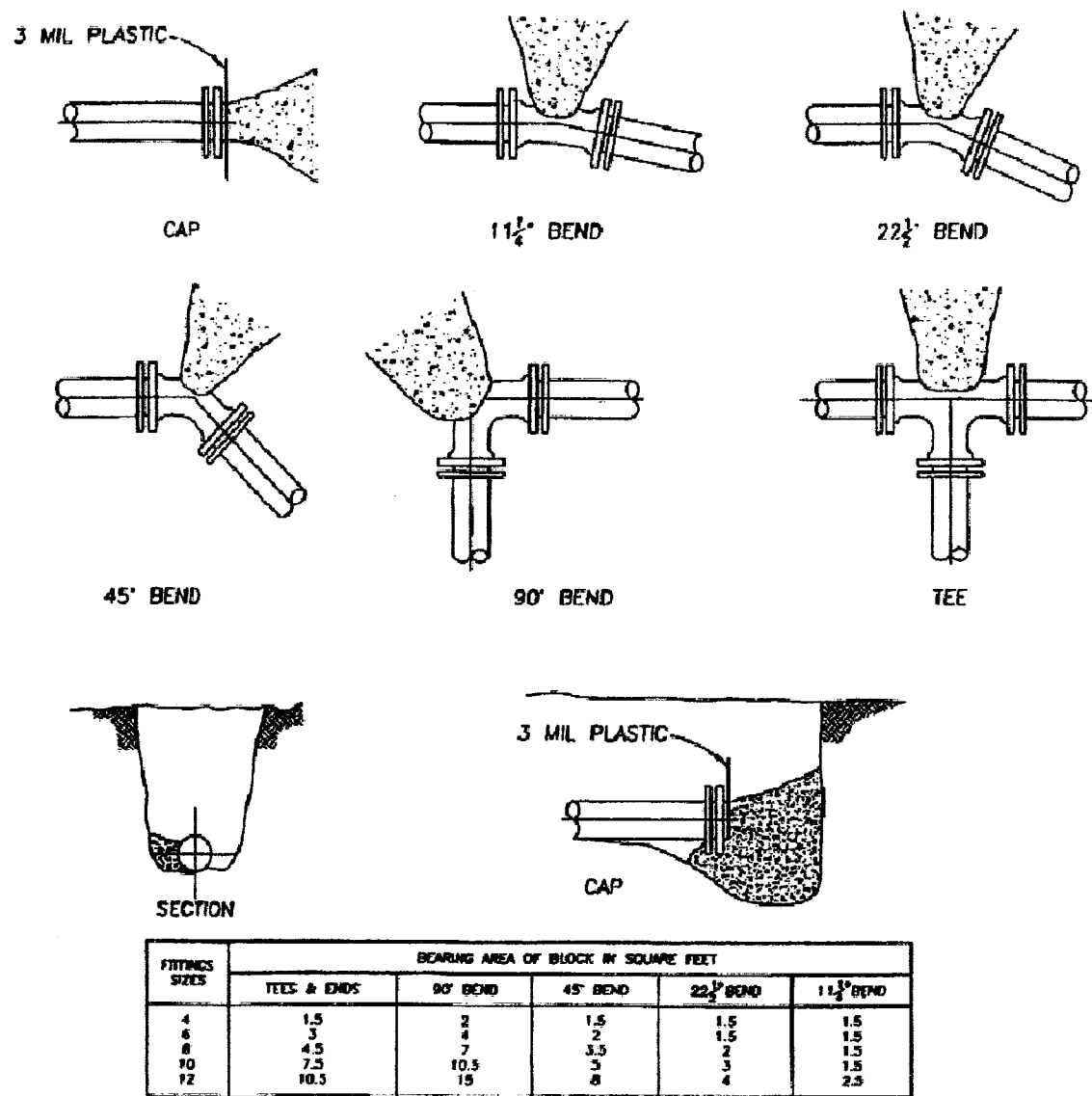
TYPICAL FIRE HYDRANT ASSEMBLY

NOT TO SCALE



FIRE HYDRANT ASSEMBLY – ELEVATION

NOT TO SCALE

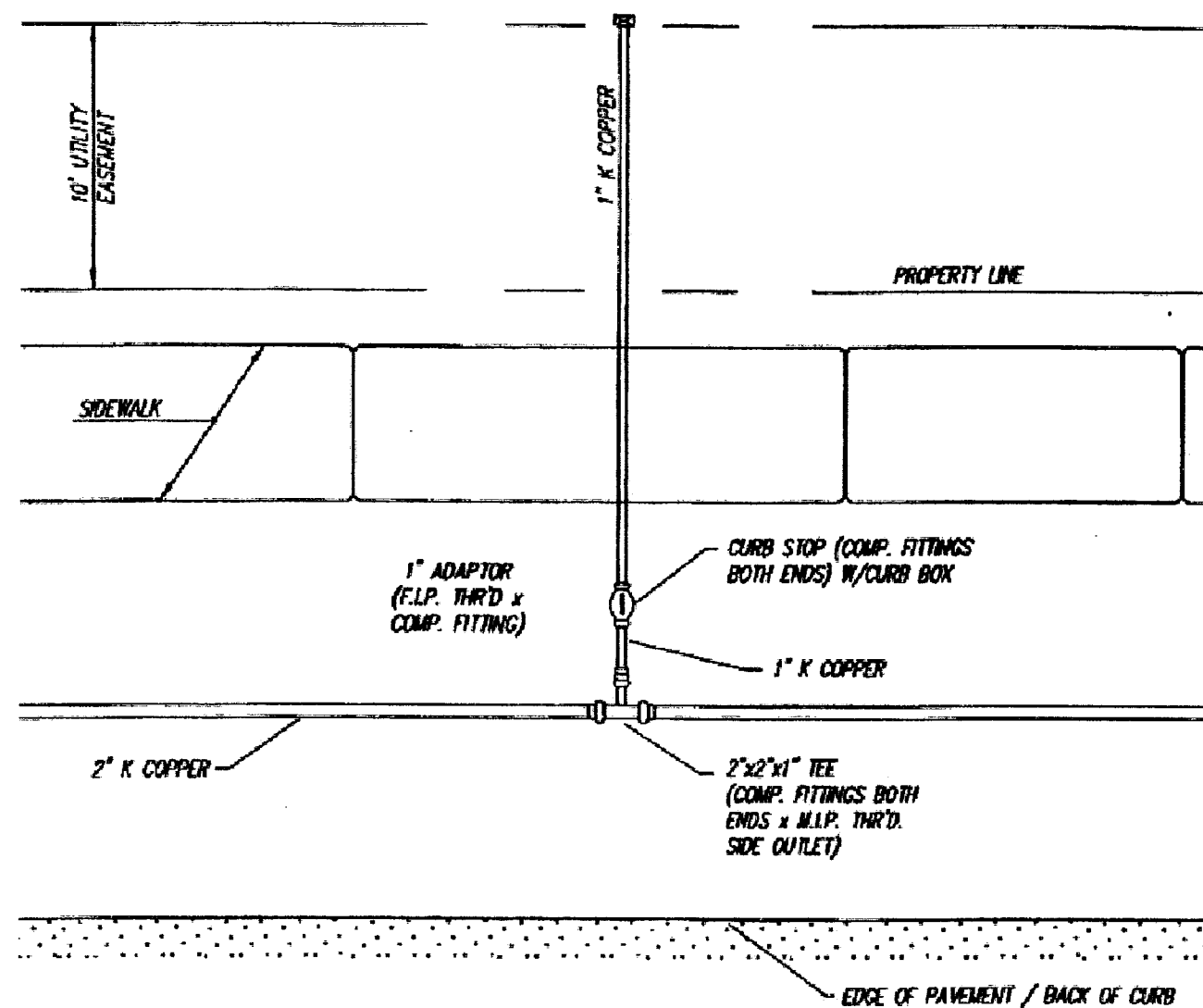


CONCRETE THRUST BLOCKING DETAIL

NOT TO SCALE

GENERAL WATERLINE INSTALLATION NOTES

- LINE AND GRADE STAKES SHALL BE PROVIDED AT 100 INTERVALS FOR WATER MAIN AND FOR EACH FITTING AND APPURTENANCE A COPY OF CUT SHEET SHALL BE PROVIDED TO FIELD INSPECTOR PRIOR TO INSTALLATION.
- WATER WORK SHALL NOT BEGIN UNTIL AREAS OF WATERLINE CONSTRUCTION ARE ROUGH GRADED (WITHIN 1 FT. OF FINISHED GRADE AND FILL AREAS ARE COMPLETED AND COMPACTED.)
- NO WATER SERVICE CONNECTIONS TO ANY BUILDINGS SHALL BE PERMITTED PRIOR TO FINAL ACCEPTANCE BY THE OWNER, WHICH SHALL INCLUDE APPROVED RECTIFICATION OF ALL PUNCH LIST ITEMS. ONCE PUNCH LIST ITEMS ARE COMPLETED, THE BUILDER SHALL BE RESPONSIBLE TO GRADE ADJUSTMENTS TO WATER FACILITIES AT TIME OF BUILDING CONSTRUCTION AND DURING FINAL SITE GRADING.
- A. MINIMUM OF 10 FEET HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN UTILITY CONDUIT CROSSOVERS AND WATER LINE APPURTENANCES (I.E. HYDRANTS, VALVES TEES, ETC).
- WATER LINE MATERIALS AND INSTALLATION PROCEDURES SHALL MEET OR EXCEED ALL APPLICABLE AWWA STANDARDS INCLUDING BUT NOT LIMITED TO C600 AND C651.
- WATERLINE MATERIAL AND INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH PRESSURE CLASS 350 D.I.P. POLY-WRAPPED, FITTINGS CLASS 53 CEMENT LINED POLY-WRAPPED AND TYPE K COPPER TUBING WITH COMPRESSION FITTINGS FOR DOMESTIC SERVICES OR 2"HDPE OR 9 POLYETHYLENE 3408 PIPE AROUND CUL-DE-SAC. IF POLYETHYLENE IS USED, A 1/2 GAUGE WIRE AND METALLIC CAUTION TAPE MUST BE USED.
- ALL TAP-IN FEES, SERVICE FEES AND INSPECTION DEPOSITS ARE TO BE PAID PRIOR TO STARTING WATER MAIN INSTALLATION. A 48 HOUR NOTICE IS REQUIRED FOR INSPECTION.
- ALL PIPE AND APPURTENANCES INSTALLED ON A DEPRESSURIZED WATER MAIN ARE TO BE WIPED CLEAN AND ALL INTERIOR SURFACES SATURATED WITH A MINIMUM 1% CHLORINE SOLUTION.
- ALL MECHANICAL JOINTS ARE TO BE RESTRAINED USING MEGALUG OR FORD EQUIVALENT. FIRE LINES RISER TO INCLUDED (2) 5/8" ALL THREAD RODS EXTENDING FROM; LOWER BEND TO RISER FLANGE.
- A RESTRAINT GASKET SHALL BE UTILIZED ON PUSH-ON JOINTS.
- ALL DUCTILE IRON PIPE AND FITTINGS TO BE POTY-WRAPPED AND TAPED AS PER DUCTILE IRON PIPE RESEARCH ASSOCIATION RECOMMENDATIONS.
- DUCTILE IRON IN CASING SHALL BE CLASS 52, POLY-WRAPPED AND ALL PUSH-ON JOINTS SHALL BE EQUIPPED WITH RESTRAINT GASKETS AND STAINLESS STEEL CASING SPACERS ARE REQUIRED.
- ALL THRUST BLOCKING WILL BE SOLID CONCRETE BLOCKS WITH OAK WEDGES OR POURED CONCRETE.
- ALL VALVES ARE OPEN LEFT AND ALL MAIN LINE VALVES ARE TO BE PLACED IN A MINIMUM OF 4" SOLID CONCRETE BLOCK. ALL VALVES TO HAVE #57 LIMESTONE UP TO OPERATING NUT OF VALVE. CURB VALVES ARE TO BE PLACED ON A SOLID STANDARD SIZE RED OR MASONRY BRICK.
- ALL FIRE HYDRANTS TO HAVE A MINIMUM OF 1/2 CUBIC YARD OF #57 LIMESTONE 6" ABOVE DRAIN HOLE OR EQUIVALENT SIZE BANK RUN GRAVEL. PLASTIC MAY BE REQUIRED AND IS TO BE PLACED OVER STONE PRIOR TO BACKFILL. A CONCRETE COLLAR CONSISTING OF A MINIMUM OF THREE 60 POUNDS BAGS OF READY MIX CONCRETE SHALL BE SPACED EQUALLY AROUND THE HYDRANT BARREL 1-1/2 FEET BELOW BURY LINE. ALL HYDRANTS TO BE TURNED WITH 4-1/2" NOZZLE FACING STREET MEETING FIRE DEPARTMENT SPECIFICATIONS.
- ALL VALVE BOX AND CURB BOX RE TO BE PAINTED BLUE AND BE MARKED WITH A WYE POLE PAINTED BLUE. WYE POLES ARE TO BE REMOVED AFTER FINAL SITE GRADING. CONTRACTOR RESPONSIBLE FOR ADJUSTMENTS TO VALVE BOXES, CURB BOXES, AND FIRE HYDRANT WITH RESPECT TO FINAL GRADING. ALL VALVES BOXES IN NEW OR PROPOSED PAVEMENT SHALL BE SCREW TYPE.
- WATERLINE WILL NOT BE ACCEPTED OR PLACED IN SERVICE UNTIL CONTRACTOR CONDUCTS AND OBTAINS SATISFACTORY RESULTS OF PRESSURE AND CHLORINE TESTS. BACTERIA TEST WILL THEN BE CONDUCTED BY OWNER. ALL VALVES, HYDRANTS, AND CURB BOXES TO BE TO PROPER GRADE PRIOR TO ACCEPTANCE.
- THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO ENSURE SAFETY OF THE PUBLIC ON AND SURROUNDING THE SITE DURING CONSTRUCTION.

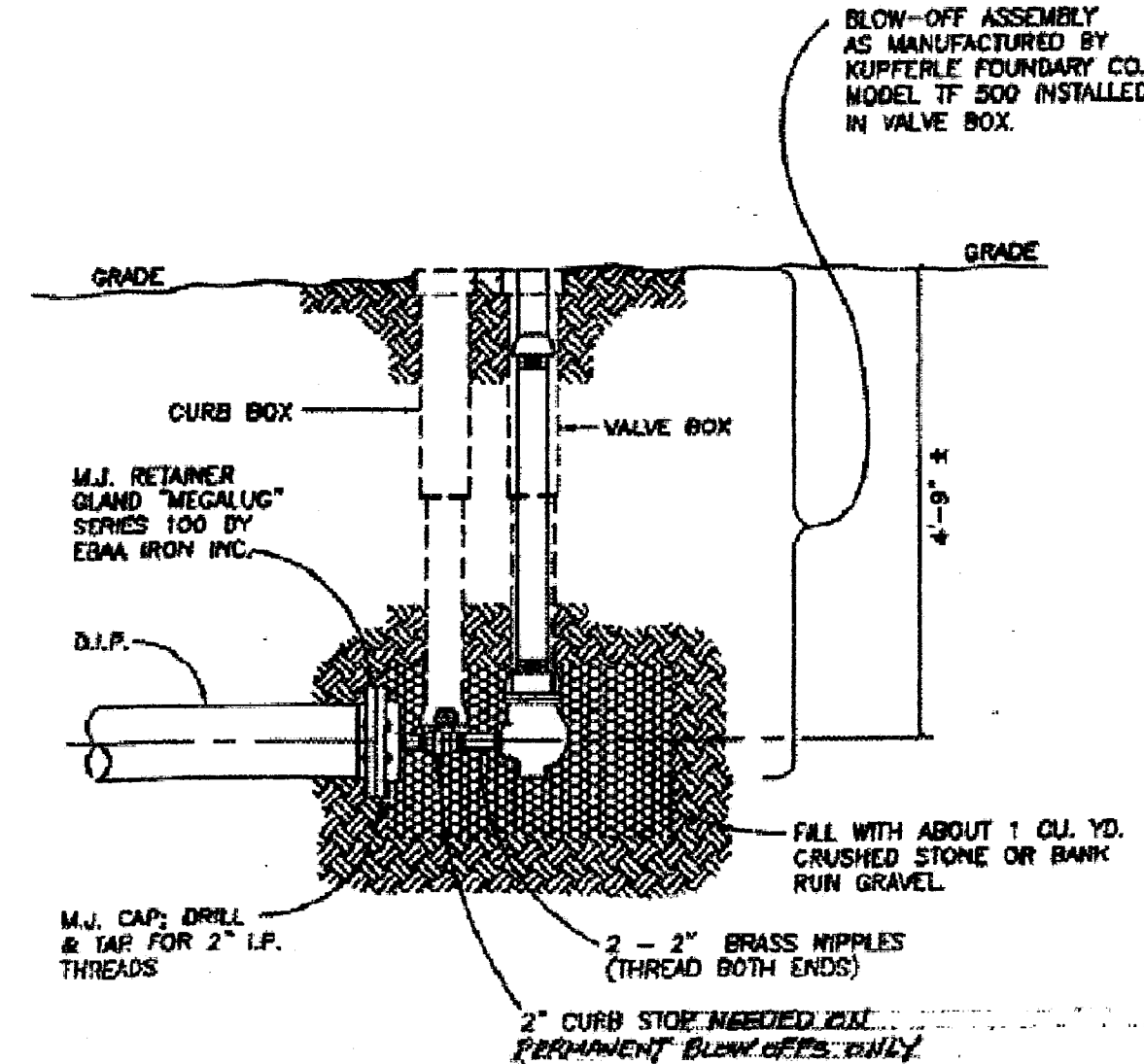


TYPICAL PRE-TAP PLAN

NOT TO SCALE

GENERAL WATERLINE INSTALLATION NOTES

- THE LOCATION OF EXISTING UTILITIES AND STRUCTURES, BOTH ABOVE GROUND AND UNDERGROUND ARE SHOWN ON THE PLANS FROM DATA AVAILABLE AT THE TIME OF THE SURVEY AND ARE NOT NECESSARILY COMPLETE AND/OR CORRECT. THE EXACT LOCATION AND PROTECTION OF EXISTING UTILITIES AND STRUCTURES IS THE RESPONSIBILITY OF THE CONTRACTOR. DURING CONSTRUCTION, THE CONTRACTOR SHALL USE DUE DILIGENCE IN PROTECTING FROM DAMAGE ALL EXISTING UTILIZES AND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. IF DAMAGED IS CAUSED BY THE CONTRACTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR RESTORATION OF SAME IN ACCORDANCE WITH THE DIRECTIONS OF THE OWNER. THE CONTRACTOR SHALL CONTACT OHIO UTILITIES PROTECTIONS SERVICES, AT 1800-362-2764, TWO WORKING DAYS PRIOR TO THE START OF CONSTRUCTION AS REQUIRED BY LAW.
- THE WATERLINE SHALL BE INSTALLED AT 4' -0 OF COVER FROM EXISTING/PROPOSED GRATE TO TOP OF THE WATERLINE. THIS 4' SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
- A MINIMUM 4' -0" HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN EXISTING STORM SEWERS AND THE WATERLINE.
- A MINIMUM 12" VERTICAL SEPARATION MUST BE MAINTAINED BETWEEN EXISTING STORM SEWERS AND WATERLINE, OUT TO OUT.
- A MINIMUM OF 10" HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN EXISTING SANITARY SEWER AND WATER LINE, OUT TO OUT.
- A MINIMUM OF 18" VERTICAL SEPARATION MUST BE MAINTAINED BETWEEN EXISTING SANITARY SEWER AND WATER LINE, OUT TO OUT.
- ALL ASPHALT AND CONCRETE DRIVES ARE TO BE SAW CUT FOR WATERLINE INSTALLATION.
- THE CONTRACTOR SHALL VISIT THE SITE TO PERSONALLY ASCERTAIN THE NATURE OF THE WORK INVOLVED AND THOROUGHLY BECOME FAMILIAR WITH THE SITE PRIOR TO THE SUBMISSION OF HIS OR HER BID.
- THE CONTRACTOR IS RESPONSIBLE FOR RESTORING THE SITE (YARDS, DITCHES DRIVEWAYS ETC.) TO ITS ORIGINAL OR BETTER CONDITION UPON COMPLETION OF THE WATERLINE.
- A TYPE 1 TRENCH SHALL BE USED AND BACKFILLED WITH EXCAVATED MATERIAL PROVIDED THAT SAID MATERIAL CONSISTS OF LOAM SAND, GRAVEL, OR OTHER SUITABLE MATERIAL. BACKFILLING FOR ROAD AND DRIVEWAY CUTS SHALL BE AS SPECIFIED BY LOCAL JURISDICTION OR ODOT IF CONSTRUCTION IS WITHIN THE STATE RIGHT OF WAY.
- THE CONTRACTOR MAY DEFLECT THE WATERLINE AS NEEDED TO MAINTAIN HORIZONTAL AND VERTICAL SEPARATION DISTANCES.
- MEG-A-LUG RETAINER REQUIRED AT ALL FITTINGS.
- EXISTING OR MARKED PROPERTY PINS SHALL NOT BE DISTURBED.



TYPICAL BLOWOFF DETAIL

NOT TO SCALE

MATERIAL SPECIFICATIONS

DUCTILE IRON PIPE. TYPE REQUIRED: PUSH-ON JOINTS, CEMENT LINED, PRESSURE CLASS 350 FOR 4 INCH THROUGH 12 INCH, THICKNESS CLASS 52 FOR 16 INCH, MANUFACTURING STANDARDS AWWA C150 AND C51. POLYETHYLENE ENCASEMENT SHALL BE INSTALLED ON ALL DUCTILE PIPE AND FITTINGS.

DUCTILE IRON FITTINGS. (TEES, CROSSES, BENDS, REDUCERS, SLEEVES, COUPLINGS AND PLUGS.) TYPE REQUIRED: MECHANICAL JOINT, TEES, CROSSES, BENDS, AND REDUCERS ARE TO BE CEMENT LINED; WORKING PRESSURE RATING 250 PSI. MANUFACTURING STANDARDS ANSI A21.53, ANSI A21.4 AND ANSI A21.10. COMPACT STYLE IS ACCEPTABLE. RETAINER GLANDS SHALL BE INSTALLED WHEREVER THERE IS A POSSIBILITY OF JOINT SEPARATION.

FIRE HYDRANTS. TYPE REQUIRED: POST TYPE, BREAKABLE FLANGE DESIGN FOR TRAFFIC COLLISIONS, 5 1/4" DIAMETER MAIN VAIN, ONE 4-1/2" PUMPER AND TWO 2-1/2" HOSE NOZZLES, 6" M.J. INLET, MAIN VALVE TO OPEN LEFT, DIRECTION OF OPENING TO BE INDICATED WITH ARROW CAST ON HYDRANT, TO BE DESIGNED FOR 5 FOOT TRENCH, NATIONAL STANDARD THREADS ON NOZZLES, O-RING PACKING PREFERRED, TYPE 304 STAINLESS STEEL BOLTS AND NUTS, OPERATING NUT AND NUT CAPS: 1-1/2" PENTAGON, COLOR YELLOW PAINT BODY TRIMMED WITH RED PAINT ON BONNET AND CAPS, AWWA STANDARD C502, MULLER CENTURION A423, US PIPE M-84, CLOW MEDALLION OR AMERICAN DARLING B-84-B.

TAPPING VALVES. TYPE REQUIRED: RESILIENT SEAT, IRON BODY, STAINLESS STEEL BONNET BOLTS AND NUTS, MECHANICAL JOINT ACCESSORIES, NON-RISING STEM, FOR UNDERGROUND SERVICES, O-RING PACKING PREFERRED, RIGHT OPENING (CLOCKWISE) 2" SQUARE OPERATING NUT, MANUFACTURING STANDARDS AND PRESSURE RATING AWWA SPECIFICATIONS C500.

4" THROUGH 12" GATE VALVES. TYPE REQUIRED: RESILIENT SEAT, IRON BODY, STAINLESS STEEL BONNET BOLTS AND NUTS, MECHANICAL JOINT ACCESSORIES, NON-RISING STEM, FOR UNDERGROUND SERVICES, O-RING PACKING PREFERRED, OPEN RIGHT (CLOCKWISE), 2" SQUARE OPERATING NUT, MANUFACTURING STANDARDS AND PRESSURE RATINGS AWWA C500, MULLER A-2360 OR EQUAL.

VALVE BOXES. TYPE REQUIRED: TWO PIECE, CAST IRON, SCREW TYPE FRO ADJUSTABLE HEIGHT, HEIGHT RANGE TO BE APPROXIMATELY 36 TO 60". THEY ARE TO INCLUDE A WELL-FITTING CAST IRON LID, THE WORK WATER TO BE CAST ON LID.

2" WATER MAIN. 2" WATER SHALL BE SOFT DRAWN K COPPER TUBING OR HIGH DENSITY POLYETHYLENE PLASTIC (HDPE), COPPER TUBE SIZE, AS CALLED OUT ON THE PLAN. IF HDPE IS USED, IT SHALL BE 200 PSI, SDR9 WITH MARKING TAPE AND 12 GAGE COPPER TRACER WIRE LAID IN THE TRENCH. BRASS COMPRESSION FITTINGS SHALL BE USED. STAINLESS STEEL STIFFENERS ARE NECESSARY AT EACH JOINT.

POLYETHYLENE ENCASEMENT. TYPE REQUIRED: EIGHT MILL THICK POLYETHYLENE TUBE MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C105/A21.5. POLYETHYLENE ADHESIVE TAPE, 1-1/2" WIDE, IS TO SEAL JOINTS.

BLOW OFF ASSEMBLIES. TYPE REQUIRED: KUPFERLE FOUNDRY TF500 OR APPROVED EQUAL. INSTALL IN VALVE BOX. INSTALL 2" CURB STOP WITH CURB BOX AHEAD OF EACH BLOW OFF.

BAKER HUGHES
FOR CROSSLAND CONSTRUCTION
MASSILLION, OHIO
STARK COUNTY
WATER LINE DETAILS

SHEET No.

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