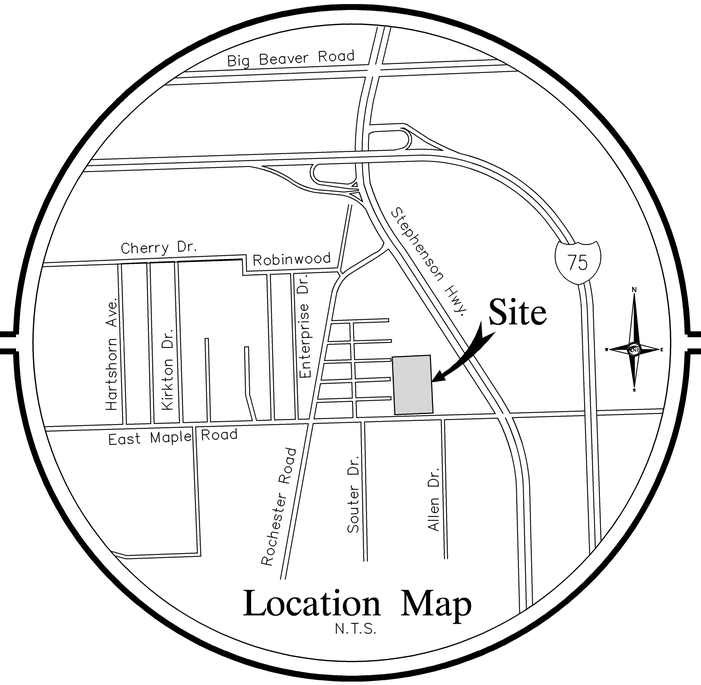
City of Troy,
Oakland County, Michigan

CONSTRUCTION PLAN PACKAGE

Prepared For:
PENSKE AUTOMOTIVE GROUP, LLC.



Location Map
N.T.S.

REVISIONS:

09-26-14	ISSUED FOR ENGINEERING REVIEW
10-17-14	REVISED PER CITY REVIEW

Owner

PENSKE AUTOMOTIVE GROUP
2555 TELEGRAPH ROAD
BLOOMFIELD HILLS, MICHIGAN 48302
CONTACT:
MR. JEFF ANDERSON
PHONE: (248) 648-2574

Civil Engineer

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVENUE
PONTIAC, MICHIGAN 48342
CONTACT:
MR. JEFFREY J. HUHTA P.E., P.S.
PHONE: (248) 332-7931
FAX: (248) 332-8257

Landscape Architect

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVENUE
PONTIAC, MICHIGAN 48342
MR. GEORGE OSTROWSKI, R.L.A.
PHONE: (248) 332-7931
FAX: (248) 332-8257

SHEET INDEX

Project Name:

1225 East Maple Road

LEGAL DESCRIPTION

PARCEL 1 (TAX ITEM NO. 20-26-351-024):
PART OF THE SOUTHWEST 1/4 OF SECTION 26 AND A PART OF THE SOUTHEAST 1/4 OF SECTION 27, TOWN 2 NORTH, RANGE 11 EAST, CITY OF TROY, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF SECTION 27; THENCE NORTH 00 DEGREES 13 MINUTES 23 SECONDS EAST A DISTANCE OF 43.00 FEET TO THE POINT OF BEGINNING; THENCE NORTH 89 DEGREES 45 MINUTES 00 SECONDS WEST, A DISTANCE OF 106.51 FEET; THENCE NORTH 29 DEGREES 36 MINUTES 52 SECONDS WEST, A DISTANCE OF 67.03 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, DISTANCE OF 327.77 FEET; THENCE NORTH 50 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 20.61 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 137.20 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 124.62 FEET; THENCE NORTH 50 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 58.95 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 74.42 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 45.57 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 80.28 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 23.43 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, DISTANCE OF 333.50 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 23.43 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 64.12 FEET; THENCE SOUTH 00 DEGREES 01 MINUTES 44 SECONDS WEST, A DISTANCE OF 619.94 FEET TO A POINT ON THE NORTH RIGHT OF WAY OF MAPLE ROAD (86 FEET WIDE); THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 599.85 FEET TO THE POINT OF BEGINNING.

PARCEL 2 (TAX ITEM NO. 20-26-351-023):
PART OF THE SOUTHWEST ¼ OF SECTION 26 AND PART OF THE SOUTHEAST ¼ OF SECTION 27, TOWN 2 NORTH, RANGE 11 EAST, CITY OF TROY, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF SECTION 27; THENCE NORTH 00 DEGREES 13 MINUTES 23 SECONDS EAST, A DISTANCE OF 43.00 FEET; THENCE NORTH 89 DEGREES 45 MINUTES 00 SECONDS WEST, A DISTANCE OF 106.51 FEET TO THE POINT OF BEGINNING; THENCE NORTH 89 DEGREES 45 MINUTES 00 SECONDS WEST, A DISTANCE OF 58.73 FEET TO THE POINT ON THE EASTERLY LINE OF STUMPF'S BEECH GROVE SUBDIVISION, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 32, PAGE 11 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 00 DEGREES 06 MINUTES 34 SECONDS WEST, A DISTANCE OF 856.83 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 30 SECONDS EAST, A DISTANCE OF 767.17 FEET; THENCE SOUTH 00 DEGREES 01 MINUTES 44 SECONDS WEST., A DISTANCE OF 237.10 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 64.12 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 23.43 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 333.50 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 23.43 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 80.28 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE 45.57 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 74.42 FEET; THENCE SOUTH 50 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 58.95 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 124.62 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 137.20 FEET; THENCE SOUTH 50 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 20.61 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 327.77 FEET; THENCE SOUTH 29 DEGREES 36 MINUTES 52 SECONDS EAST, A DISTANCE OF 67.03 FEET TO THE POINT OF BEGINNING.

NFE JOB # F731-02

STATE OF MICHIGAN
JASON P. LONGHURST
ENGINEER NO. 54075
LICENSED PROFESSIONAL ENGINEER

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

Tree Inventory List

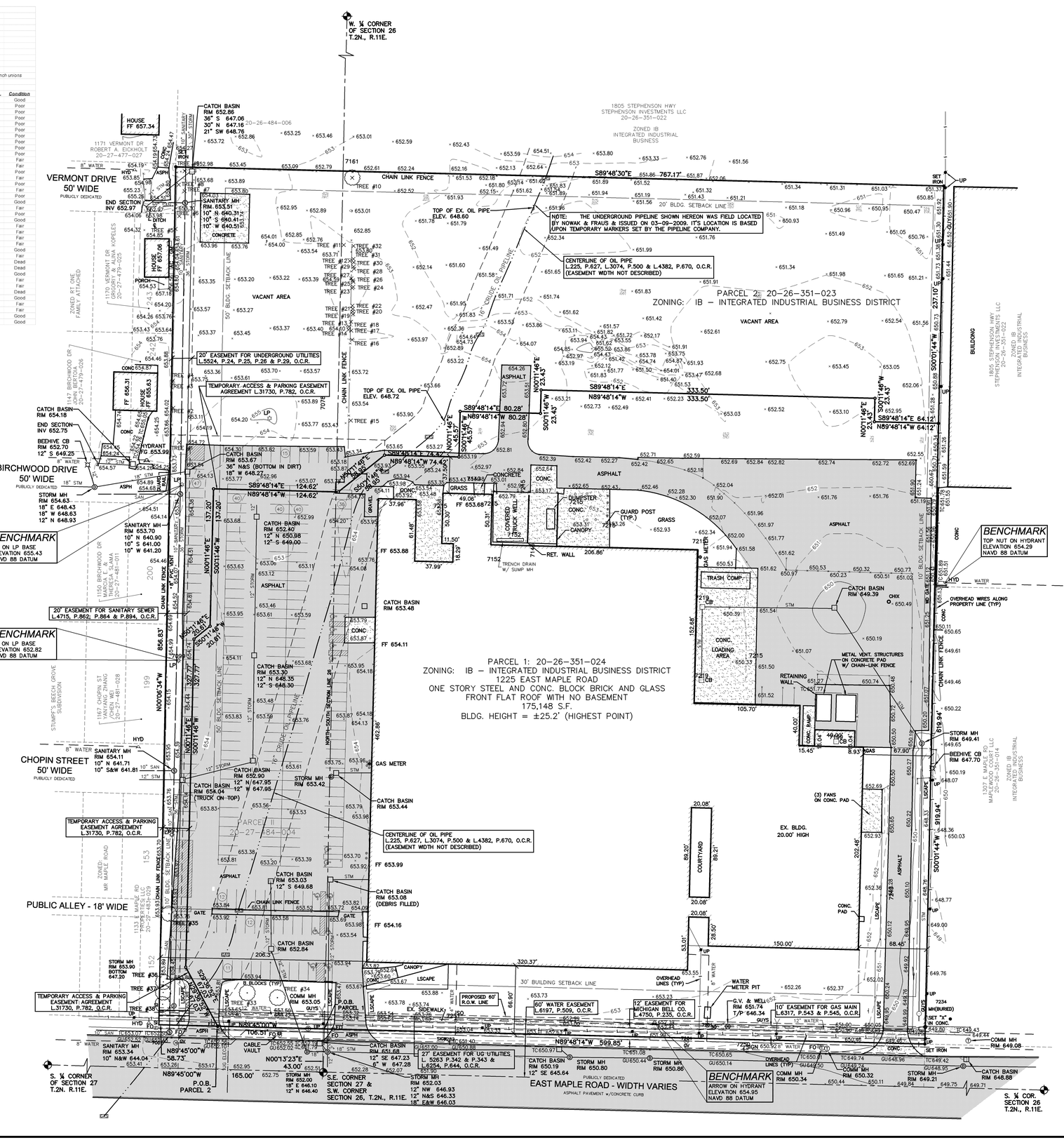
Client Name:	Penske
Job Location:	1225 E. Maple, Troy
Date Completed:	9/5/2014

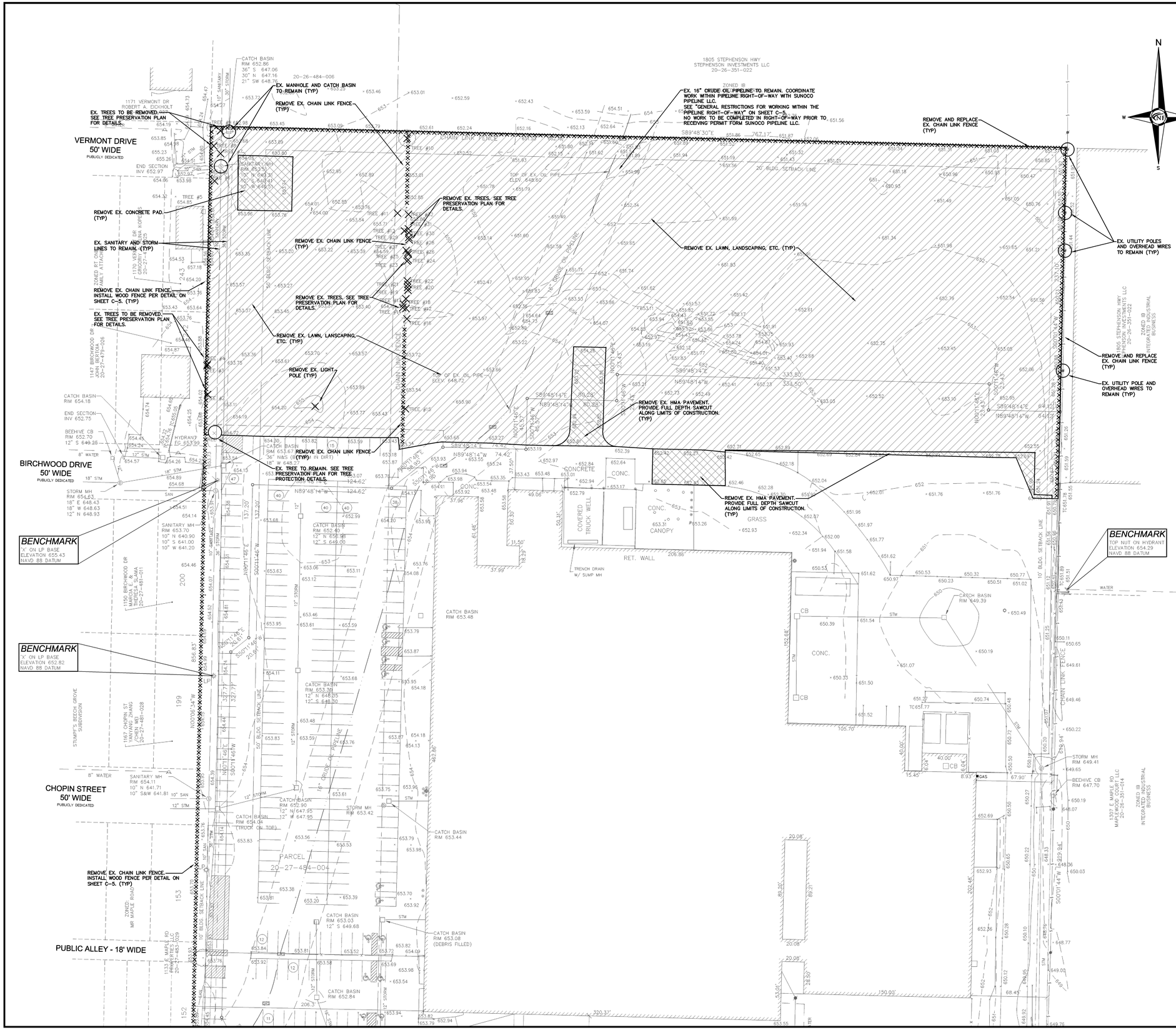
Condition Description Notes:
"Good" - no observed structural defects"
"Fair" - minor structural defects, marginal form, some insect activity noted"
"Poor" - major structural defects, poor form, insect infested"

*"Structural defects may include decayed wood, cracks, root problems, weak branch unions cankers, poor tree architecture, dead/failed branches due to various causes.

Tree #	Botanical Name	Common Name	Dia.	Type	Other Dia.	Condition
1	Ulmus pumila	Siberian Elm	15			Good
2	Acer negundo	Boxelder	10			Poor
3	Acer negundo	Boxelder	9			Poor
4	Acer negundo	Boxelder	10			Poor
5	Acer negundo	Boxelder	11			Poor
6	Acer negundo	Boxelder	9	Twin	4	Poor
7	Ulmus pumila	Siberian Elm	8			Poor
8	Acer negundo	Boxelder	5			Poor
9	Acer negundo	Boxelder	5			Poor
10	Populus deltoides	Eastern Cottonwood	13			Poor
11	Populus deltoides	Eastern Cottonwood	18			Fair
12	Populus deltoides	Eastern Cottonwood	15	Twin	13	Fair
13	Populus deltoides	Eastern Cottonwood	17			Poor
14	Populus deltoides	Eastern Cottonwood	22			Fair
15	Ulmus pumila	Siberian Elm	10			Poor
16	Populus deltoides	Eastern Cottonwood	18			Fair
17	Populus deltoides	Eastern Cottonwood	15	Twin	15	Poor
18	Populus deltoides	Eastern Cottonwood	20			Good
19	Populus deltoides	Eastern Cottonwood	18	Multiple	16, 9	Fair
20	Populus deltoides	Eastern Cottonwood	10			Poor
21	Populus deltoides	Eastern Cottonwood	16			Good
22	Populus deltoides	Eastern Cottonwood	14			Fair
23	Populus deltoides	Eastern Cottonwood	14			Fair
24	Populus deltoides	Eastern Cottonwood	12			Fair
25	Populus deltoides	Eastern Cottonwood	12			Fair
26	Populus deltoides	Eastern Cottonwood	16			Good
27	Populus deltoides	Eastern Cottonwood	17			Fair
28	Populus deltoides	Eastern Cottonwood	17			Dead
29	Populus deltoides	Eastern Cottonwood	12			Dead
30	Populus deltoides	Eastern Cottonwood	16	Twin	13	Good
31	Populus deltoides	Eastern Cottonwood	11			Fair
32	Populus deltoides	Eastern Cottonwood	28			Fair
33	Acer platanoides	Norway maple	6			Dead
34	Acer platanoides	Norway maple	8			Good
35	Ulmus pumila	Siberian Elm	12			Fair
36	Pinus nigra	Austrian Pine	9			Fair
37	Pinus nigra	Austrian Pine	9			Good
38	Pinus nigra	Austrian Pine	16			Good

ANTHONY J. DOMBROWSKI
Registered Forester
State of Michigan ID #3301000669


W. ¼ CORNER OF SECTION 26 T.2N., R.11E.
VERMONT DRIVE 50' WIDE PUBLICLY DEDICATED
CHOPIN STREET 50' WIDE PUBLICLY DEDICATED
BIRCHWOOD DRIVE 50' WIDE PUBLICLY DEDICATED
PUBLIC ALLEY - 18' WIDE
EAST MAPLE ROAD - WIDTH VARIES
PUBLICLY DEDICATED
ASPHALT PAVEMENT W/CONCRETE CURB
1805 STEPHENSON HWY STEPHENSON INVESTMENTS LLC 20-26-351-022
ZONED IB INTEGRATED INDUSTRIAL BUSINESS
1171 VERMONT DR ROBERT A. EICKHOLT 20-27-477-027
1170 VERMONT DR JOSEPH & ANNA KOPELES 20-27-479-025
1147 BIRCHWOOD DR ANTHONY & ANNE MARIE 20-27-479-026
1150 BIRCHWOOD DR THERESA SLAMA 20-27-481-011
1167 CHOPIN ST YOHEN WEI 20-27-481-028
1307 E MAPLE RD MAPLEWOOD COURT LLC 20-26-351-023
STUMPF'S BEECH GROVE SUBDIVISION
PARCEL 1: 20-26-351-024
ZONING: IB – INTEGRATED INDUSTRIAL BUSINESS DISTRICT
1225 EAST MAPLE ROAD
ONE STORY STEEL AND CONC. BLOCK BRICK AND GLASS FRONT FLAT ROOF WITH NO BASEMENT
175,148 S.F.
BLDG. HEIGHT = ±25.2' (HIGHEST POINT)
PARCEL 2: 20-26-351-023
ZONING: IB – INTEGRATED INDUSTRIAL BUSINESS DISTRICT
BUILDING
VACANT AREA
ASPHALT
CONCRETE
GRASS
CANOPY
TRASH COMP.
LOADING AREA
RETAINING WALL
RET. WALL
GAS METER
OVERHEAD WIRES ALONG PROPERTY LINE (TYP)
METAL VENT. STRUCTURES ON CONCRETE PAD W/ CHAIN-LINK FENCE
(3) FANS ON CONC. PAD
EX. BLDG. 20.00' HIGH
COURTYARD
CONC. PAD
CONC. RAMP
TRENCH DRAIN W/ SUMP MH
CABLE VAULT
CHAIN LINK FENCE
TEMPORARY ACCESS & PARKING EASEMENT AGREEMENT L.31730, P.782, O.C.R.
20' EASEMENT FOR UNDERGROUND UTILITIES L.5524, P.24, P.25, P.26 & P.29, O.C.R.
20' EASEMENT FOR SANITARY SEWER L.4715, P.862; P.864 & P.894, O.C.R.
27' EASEMENT FOR UG UTILITIES L. 5283 P.342 & P.343 & L.6254, P.644, O.C.R.
60' WATER EASEMENT L.6197, P.509, O.C.R.
12' EASEMENT FOR MICHIGAN BELL CO. L.4750, P.235, O.C.R.
10' EASEMENT FOR GAS MAIN L.6317, P.543 & P.545, O.C.R.
PROPOSED 60' R.O.W. LINE
CENTERLINE OF OIL PIPE L.225, P.627, L.3074, P.500 & L.4382, P.670, O.C.R. (EASEMENT WIDTH NOT DESCRIBED)
TOP OF EX. OIL PIPE ELEV. 648.60
TOP OF EX. OIL PIPE ELEV. 648.72
NOTE: THE UNDERGROUND PIPELINE SHOWN HEREON WAS FIELD LOCATED BY NOWAK & FRAUS & ISSUED ON 03-09-2009. IT'S LOCATION IS BASED UPON TEMPORARY MARKERS SET BY THE PIPELINE COMPANY.
S89°48'30"E 767.17'
S89°48'14"E 333.50'
N89°48'14"W 333.50'
S89°48'14"E 80.28'
N89°48'14"W 74.42'
N89°48'14"W 124.62'
N89°48'14"W 599.85'
S00°01'46"E 237.10'
S00°01'44"W 919.94'
N89°45'00"W 106.51'
N89°45'00"W 58.73'
N00°13'23"E 43.00'
N89°45'00"W 165.00'
S00°01'46"E 137.20'
N00°01'46"W 137.20'
S00°01'46"E 45.57'
N00°01'46"W 23.43'
S00°01'46"E 23.43'
S00°06'34"W 856.83'
N00°06'34"W 462.86'
S00°01'46"E 20.81'
N00°01'46"E 20.81'
S00°01'46"E 206.37'
S00°01'46"E 150.00'
S00°01'46"E 320.37'
S00°01'46"E 53.01'
S00°01'46"E 28.50'
S00°01'46"E 68.45'
S00°01'46"E 202.48'
S00°01'46"E 649.92'
S00°01'46"E 649.76'
S00°01'46"E 648.77'
S00°01'46"E 649.00'
S00°01'46"E 648.36'
S00°01'46"E 650.03'
S00°01'46"E 650.12'
S00°01'46"E 650.22'
S00°01'46"E 650.30'
S00°01'46"E 650.44'
S00°01'46"E 650.73'
S00°01'46"E 651.28'
S00°01'46"E 651.73'
S00°01'46"E 651.80'
S00°01'46"E 651.82'
S00°01'46"E 651.37'
S00°01'46"E 650.85'
S00°01'46"E 650.47'
S00°01'46"E 650.76'
S00°01'46"E 651.05'
S00°01'46"E 651.03'
S00°01'46"E 651.31'
S00°01'46"E 651.34'
S00°01'46"E 651.18'
S00°01'46"E 650.96'
S00°01'46"E 650.95'
S00°01'46"E 651.21'
S00°01'46"E 651.65'
S00°01'46"E 651.98'
S00°01'46"E 652.79'
S00°01'46"E 652.54'
S00°01'46"E 651.56'
S00°01'46"E 652.06'
S00°01'46"E 652.95'
S00°01'46"E 653.05'
S00°01'46"E 653.45'
S00°01'46"E 653.10'
S00°01'46"E 652.75'
S00°01'46"E 652.52'
S00°01'46"E 653.03'
S00°01'46"E 652.61'
S00°01'46"E 652.42'
S00°01'46"E 652.18'
S00°01'46"E 652.04'
S00°01'46"E 651.91'
S00°01'46"E 651.76'
S00°01'46"E 651.69'
S00°01'46"E 651.61'
S00°01'46"E 651.53'
S00°01'46"E 651.45'
S00°01'46"E 651.28'
S00°01'46"E 651.19'
S00°01'46"E 651.11'
S00°01'46"E 651.02'
S00°01'46"E 650.94'
S00°01'46"E 650.86'
S00°01'46"E 650.77'
S00°01'46"E 650.68'
S00°01'46"E 650.65'
S00°01'46"E 650.57'
S00°01'46"E 650.49'
S00°01'46"E 650.40'
S00°01'46"E 650.32'
S00°01'46"E 650.23'
S00°01'46"E 650.15'
S00°01'46"E 650.06'
S00°01'46"E 649.98'
S00°01'46"E 649.89'
S00°01'46"E 649.81'
S00°01'46"E 649.72'
S00°01'46"E 649.64'
S00°01'46"E 649.55'
S00°01'46"E 649.47'
S00°01'46"E 649.38'
S00°01'46"E 649.30'
S00°01'46"E 649.21'
S00°01'46"E 649.13'
S00°01'46"E 649.04'
S00°01'46"E 648.96'
S00°01'46"E


VERMONT DRIVE
50' WIDE
PUBLICLY DEDICATED
BIRCHWOOD DRIVE
50' WIDE
PUBLICLY DEDICATED
CHOPIN STREET
50' WIDE
PUBLICLY DEDICATED
PUBLIC ALLEY - 18' WIDE
1805 STEPHENSON HWY
STEPHENSON INVESTMENTS LLC
20-26-351-022
ZONED IB
1171 VERMONT DR
ROBERT A. EICHHOLT
20-26-484-005
1170 VERMONT DR
DRIOUCH KHOPEN
20-27-481-015
1147 BIRCHWOOD DR
MARIA E. NOWICKI
20-27-479-026
1150 BIRCHWOOD DR
MARIA E. NOWICKI
THERESA SLAMA
20-27-480-001
1147 CHOPIN ST.
YANYANG ZHANG
CHEN WEI
20-27-481-028
1133 E MAPLE RD
PRIMEPIES LLC
20-27-482-029
1307 E MAPLE RD
MAPLEWOOD COURT LLC
20-26-351-014
ZONED IB
INTEGRATED INDUSTRIAL
BUSINESS
ZONED MR
MIX MAPLE ROAD
ZONED RT
ONE FAMILY ATTACHED
PARCEL
20-27-484-004
BENCHMARK
"X" ON LP BASE
ELEVATION 655.43
NAVD 88 DATUM
BENCHMARK
"X" ON LP BASE
ELEVATION 652.82
NAVD 88 DATUM
BENCHMARK
TOP NUT ON HYDRANT
ELEVATION 654.29
NAVD 88 DATUM
EX. TREES TO BE REMOVED. SEE TREE PRESERVATION PLAN FOR DETAILS.
REMOVE EX. CONCRETE PAD. (TYP)
EX. SANITARY AND STORM LINES TO REMAIN. (TYP)
REMOVE EX. CHAIN LINK FENCE. INSTALL WOOD FENCE PER DETAIL ON SHEET C-5. (TYP)
EX. TREES TO BE REMOVED. SEE TREE PRESERVATION PLAN FOR DETAILS.
REMOVE EX. LIGHT POLE (TYP)
REMOVE EX. CHAIN LINK FENCE. INSTALL WOOD FENCE PER DETAIL ON SHEET C-5. (TYP)
EX. MANHOLE AND CATCH BASIN TO REMAIN (TYP)
REMOVE EX. CHAIN LINK FENCE (TYP)
REMOVE EX. TREES. SEE TREE PRESERVATION PLAN FOR DETAILS.
REMOVE EX. CHAIN LINK FENCE (TYP)
REMOVE EX. TREES. SEE TREE PRESERVATION PLAN FOR DETAILS.
REMOVE EX. LAWN, LANSCAPING, ETC. (TYP)
REMOVE EX. CHAIN LINK FENCE (TYP)
EX. TREE TO REMAIN. SEE TREE PRESERVATION PLAN FOR TREE PROTECTION DETAILS.
EX. 16" CRUDE OIL PIPELINE TO REMAIN. COORDINATE WORK WITHIN PIPELINE RIGHT-OF-WAY WITH SUNOCO PIPELINE LLC. SEE "GENERAL RESTRICTIONS FOR WORKING WITHIN THE PIPELINE RIGHT-OF-WAY" ON SHEET C-5. NO WORK TO BE COMPLETED IN RIGHT-OF-WAY PRIOR TO RECEIVING PERMIT FORM SUNOCO PIPELINE LLC.
REMOVE AND REPLACE EX. CHAIN LINK FENCE (TYP)
REMOVE EX. LAWN, LANDSCAPING, ETC. (TYP)
EX. UTILITY POLES AND OVERHEAD WIRES TO REMAIN (TYP)
REMOVE EX. HMA PAVEMENT. PROVIDE FULL DEPTH SAWCUT ALONG LIMITS OF CONSTRUCTION. (TYP)
REMOVE AND REPLACE EX. CHAIN LINK FENCE (TYP)
EX. UTILITY POLE AND OVERHEAD WIRES TO REMAIN (TYP)
REMOVE EX. HMA PAVEMENT. PROVIDE FULL DEPTH SAWCUT ALONG LIMITS OF CONSTRUCTION. (TYP)
REMOVE EX. CHAIN LINK FENCE. INSTALL WOOD FENCE PER DETAIL ON SHEET C-5. (TYP)
CATCH BASIN RIM 652.86 36" S 647.06 30" N 647.16 21" SW 648.76
CATCH BASIN RIM 654.18
END SECTION INV 652.75
BEEHIVE CB RIM 652.70 12" S 649.26
STORM MH RIM 654.63 18" E 648.43 18" W 648.63 12" N 648.93
SANITARY MH RIM 653.70 10" N 640.90 10" S 641.00 10" W 641.20
SANITARY MH RIM 654.11 10" N 641.71 10" S&W 641.81
CATCH BASIN RIM 652.90 12" N/W 647.95 12" W 647.95
CATCH BASIN RIM 654.04 (TRUCK ON TOP)
CATCH BASIN RIM 653.03 12" S 649.68
CATCH BASIN RIM 652.84
CATCH BASIN RIM 653.48
CATCH BASIN RIM 653.36 12" N 648.35 12" S 648.50
CATCH BASIN RIM 653.44
CATCH BASIN RIM 653.08 (DEBRIS FILLED)
CATCH BASIN RIM 649.39
STORM MH RIM 653.42
STORM MH RIM 649.41
BEEHIVE CB RIM 647.70
HYDRANT EL 653.39
COVERED TRUCK WELL
CONCRETE
CONC.
CANOPY
GRASS
RET. WALL
TRENCH DRAIN W/ SUMP MH
CHAIN LINK FENCE
TOP OF EX. OIL PIPE ELEV. 648.69
TOP OF EX. OIL PIPE ELEV. 648.72
20' BLDG. SETBACK LINE
50' BLDG. SETBACK LINE
10' BLDG. SETBACK LINE
N89°48'14"W 74.42'
S89°48'14"E 30.28'
N89°48'14"W 30.28'
S89°48'30"E 767.17'
N89°48'14"W 333.50'
N00°11'46"E 40.57'
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S00°11'46"W 460.86'
S00°11'46"W 619.94'
S00°11'44"W 202.48'
150.99'
206.86'
105.70'
220.37'
206.3'
61.48'
50.30'
50.41'
29.08'
89.21'
20.08'
28.50'
33.01'
40.00'
15.45'
8.93'
67.90'
68.45'
6.04'
6.44'
11.50'
37.99'
37.96'
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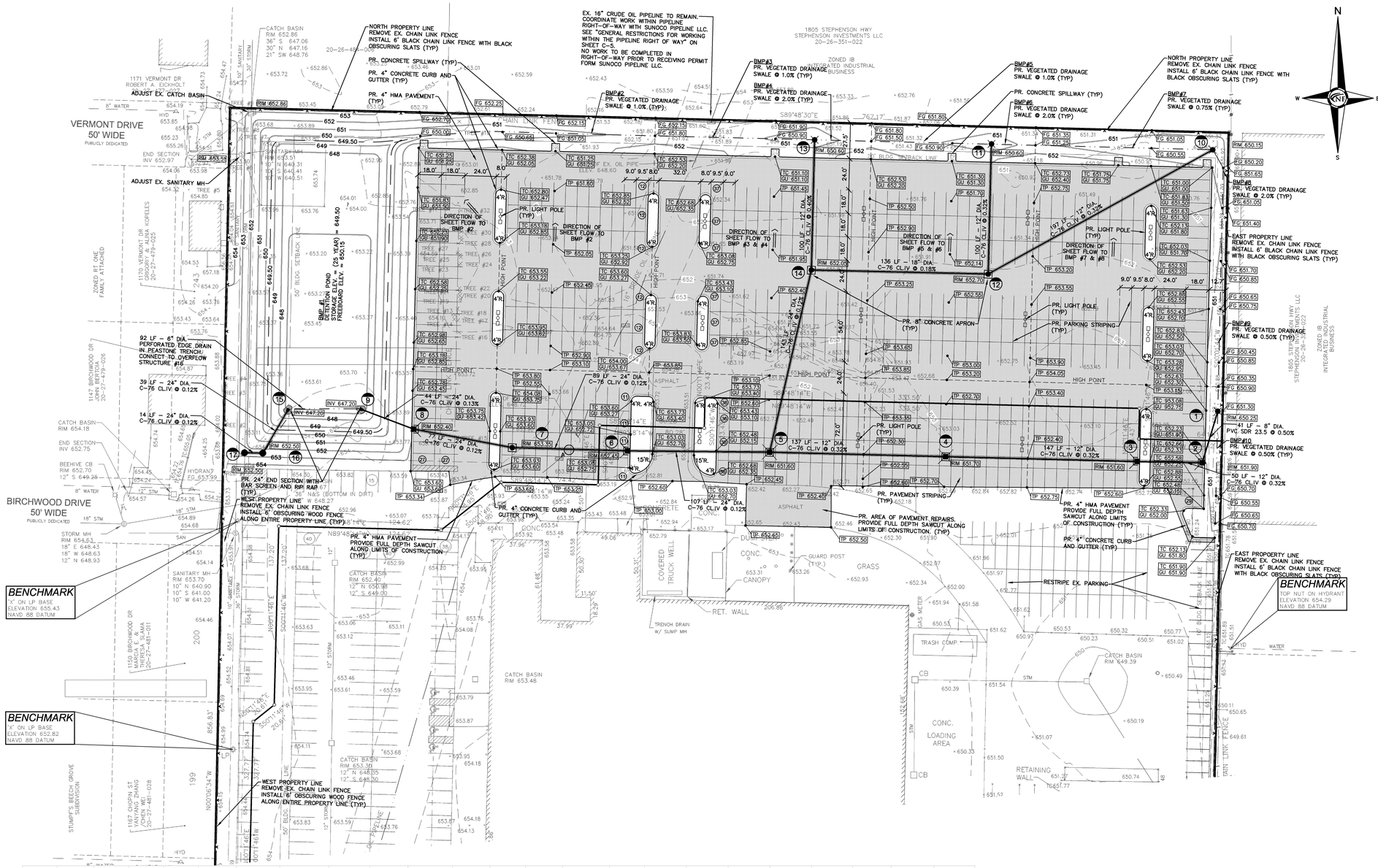


NOTE

ALL REPAIR AND MAINTENANCE ACTIVITIES SHALL BE PERFORMED ENTIRELY WITHIN THE ENCLOSED BUILDING.

NOTE

DISMANTLED, WRECKED, INOPERABLE VEHICLES, ANY VEHICLE PARTS, OR SCRAP OF ANY KIND SHALL NOT BE STORED OUTDOORS.

NOTE

PROPOSED PERIMETER FENCING SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES.

STORM STRUCTURE SCHEDULE

1. PR. 2' R.Y.C.B. W/ 2' SUMP AND EJW 2850 FRAME AND TYPE 01 COVER
   PR. RIM 650.25
   PR. 8" SW INV. 648.75
2. PR. 4' DIA CATCH BASIN W/2' SUMP
   PR. RIM 651.90
   PR. 8" NE INV. 648.55
   PR. 12" W INV. 648.55
3. PR. 4' DIA CATCH BASIN W/2' SUMP
   PR. RIM 651.60
   PR. 12" E INV. 648.39
   PR. 12" W INV. 648.39
4. PR. 4' DIA CATCH BASIN W/2' SUMP
   PR. RIM 651.70
   PR. 12" E INV. 647.92
   PR. 12" W INV. 647.92
5. PR. 5' DIA CATCH BASIN W/2' SUMP
   PR. RIM 651.60
   PR. 12" E INV. 647.48
   PR. 24" W INV. 647.48
   PR. 24" NE INV. 647.48
6. PR. 4' DIA CATCH BASIN W/2' SUMP
   PR. RIM 652.45
   PR. 24" E INV. 647.35
   PR. 24" W INV. 642.90
7. PR. 4' DIA MANHOLE
   RIM 653.35
   PR. 24" E INV. 642.82
   PR. 24" NW INV. 647.35
8. PR. 4' DIA. CATCH BASIN W/ 2' SUMP
   PR. RIM 652.40
   PR. 24" SE INV. 647.26
   PR. 24" NW INV. 647.26
9. PR. 24" END SECTION W/ BAR SCREEN
   PR. SE INV. 647.20
10. PR. 2' DIA. R.Y.C.B. W/ 2' SUMP AND EJW 2850 FRAME AND TYPE 01 COVER
    PR. RIM 650.15
    PR. 12" SW INV. 648.52
11. PR. 2' DIA. R.Y.C.B. W/ 2' SUMP AND EJW 2850 FRAME AND TYPE 01 COVER
    PR. RIM 650.60
    PR. 12" S INV. 648.21
12. PR. 5' DIA. MANHOLE
    PR. RIM 652.70
    PR. 12" N INV. 647.89
    PR. 12" NE INV. 647.89
    PR. 18" W INV. 647.89
13. PR. 2' DIA. R.Y.C.B. W/ 2' SUMP AND EJW 2850 FRAME AND TYPE 01 COVER
    W/ 2' SUMP
    PR. RIM 650.60
    PR. 12" S INV. 648.05
14. PR. 5' DIA. MANHOLE
    PR. RIM 652.05
    PR. 12" N INV. 647.65
    PR. 18" E INV. 647.65
    PR. 24" SW INV. 647.65
15. PR. 24" END SECTION W/ BAR SCREEN
    PR. SW INV. 647.20
16. PR. 6' DIA. OVERFLOW MANHOLE W/ 2' SUMP
    RIM 651.50
    PR. 24" NE INV. 647.17
    PR. 24" W INV. 647.17
17. PR. 6' DIA MANHOLE OVER EX. SEWER
    PR. RIM 652.50
    PR. 24" E INV. 647.15
    PR. 36" N/S INV. 647.15 (V.I.F.)

PAVING LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED ASPHALT PAVEMENT

LEGEND

- MANHOLE — EXISTING SANITARY SEWER
- SAN. CLEAN OUT
- HYDRANT, GATE VALVE — EXISTING WATERMAIN
- MANHOLE, CATCH BASIN — EXISTING STORM SEWER
- EX. R. Y. CATCH BASIN
- UTILITY POLE, GUY POLE, GUY WIRE — EXISTING BURIED CABLES; OVERHEAD LINES
- EXISTING GAS MAIN
- C.O., MANHOLE — PR. SANITARY SEWER
- HYDRANT, GATE VALVE — PR. WATER MAIN
- INLET, C.B., MANHOLE — PR. STORM SEWER
- PR. R. Y. CATCH BASIN
- COMPACT TO 95% MAX. DENSITY — PR. SAND BACKFILL
- PROPOSED LIGHT POLE
- PROPOSED CURB AND GUTTER
- TC 600.00 — PR. TOP OF CURB ELEVATION
- GU 600.00 — PR. GUTTER ELEVATION
- TP 600.00 — PR. TOP OF PVMT. ELEVATION
- FG 600.00 — FINISH GRADE ELEVATION

UTILITY CROSSING SCHEDULE

A — EX. 16" CRUDE OIL B/P 647.26 (V.I.F.)
PR. 24" STORM T/P 645.22

–MAINTAIN 24" (MINIMUM) VERTICAL CLEARANCE BETWEEN UTILITIES PER SUNOCO PIPELINE, LLC. STANDARDS
–SEE STORM SEWER PROFILES ON SHEET C4.

SITE DATA

ZONING: IB – INDUSTRIAL BUSINESS DISTRICT

MIN. YARD SETBACKS	REQUIRED	PROPOSED
FRONT	30.0 FT.	N/A
LEAST SIDE YARD	10.0 FT.	13.0 FT.
TOTAL SIDE YARDS	20.0 FT.	41.8 FT.
REAR	20.0 FT.	27.5 FT.

VEHICLE PARKING

REQUIRED PARKING
LIGHT INDUSTRIAL
1 SPACE / 550 SQ. FT. OF GROSS FLOOR AREA

REQUIRED SPACES
175,148 SQ.FT/550 SPACES = 318 SPACES

EXISTING SPACES = 255 SPACES

PROPOSED VEHICLE STORAGE SPACES = 565 SPACES

TOTAL PROVIDED SPACES = 820 SPACES

LOT COVERAGE

PAVEMENT:	341,658.92 SQ. FT.	52.04%
LANDSCAPE:	140,105.88 SQ. FT.	21.33%
BUILDING:	174,803.61 SQ. FT.	26.63%
TOTAL:	656,586.41 SQ. FT.	100.00%

ESTIMATED QUANTITIES

PAVING

DESCRIPTION	QUANTITY	UNITS
4" ASPHALT ON 8" 21AA BASE	16,430	S.Y.
8" REINFORCED CONCRETE SPILLWAY	25	S.Y.
8" NON-REINFORCED CONCRETE BOXOUT	27	S.Y.
4" CONCRETE CURB & GUTTER	2,802	L.F.

STORM SEWER

DESCRIPTION	QUANTITY	UNITS
8" PVC, SDR 23.5, SEWER PIPE	41	L.F.
12" C–76, CLASS IV, SEWER PIPE	728	L.F.
18" C–76, CLASS IV, SEWER PIPE	136	L.F.
24" C–76, CLASS IV, SEWER PIPE	513	L.F.
2' DIA. INLET	4	EA.
4' DIA. CATCH BASIN W/ 2' SUMP	5	EA.
4' DIA. MANHOLE W/ 2' SUMP	1	EA.
5' DIA. CATCH BASIN W/ 2' SUMP	1	EA.
5' DIA. MANHOLE	2	EA.
6' DIA. MANHOLE OVER EX. SEWER	1	EA.
6' DIA. OVERFLOW MANHOLE	1	EA.
24" END SECTION W/ BAR SCREEN	2	EA.
SEWER TAP/CONNECTION	1	EA.

T= 20 Minutes — Time of Concentration (Industrial Site)
I = 175 / (T+25) — 10 Year Storm Event Intensity
n (Conc.) 0.013 — Manning's Roughness Coefficient
n (Pvc) 0.012 — Manning's Roughness Coefficient

City of Troy, Oakland County, Michigan
Storm Sewer Calculations

Project No: F731-02
Project Name: Penske - Troy
Location: 1225 E. Maple Road
Dated: 10/17/14
Revised:

Drainage Area (Location)	From Manhole Number	To Manhole Number	Drainage Area (Acres)	Runoff Coefficient (C)	Equivalent Area (C * A)	Total Area (Sum C * A)	Time of Concentration (Minutes)	Rainfall Intensity (Inches/Hr.)	Actual Discharge (CFS)	Pipe Size (Inches)	Pipe Slope (% Slope)	Pipe Length (Feet)	Flow Full Velocity (Ft / Sec)	Time of Flow (Minutes)	Full Pipe Capacity (CFS)	H. G. Elev. Upper End (Feet)	H. G. Elev. Lower End (Feet)	H. G. Slope (% Slope)	Theoretical Velocity (Ft / Sec)	Rim Elevation (Upper)	Change in Elevation (Feet)	Invert Elev. Upper End (Feet)	Invert Elev. Lower End (Feet)
A	10	12	0.620	0.730	0.453	0.453	20.00	3.889	1.760	12	0.32	197	2.566	1.28	2.02	649.97	649.49	0.2441	2.241	650.25	0.63	648.52	647.89
B	11	12	0.570	0.790	0.450	0.450	20.00	3.889	1.751	12	0.32	100	2.566	0.65	2.02	649.73	649.49	0.2416	2.230	650.60	0.32	648.21	647.89
	12	14	0.000	0.000	0.000	0.903	21.28	3.781	3.414	18	0.18	136	2.522	0.90	4.46	649.49	649.34	0.1056	1.932	652.70	0.24	647.89	647.65
C	13	14	0.740	0.780	0.577	0.577	20.00	3.889	2.245	12	0.40	100	2.869	0.58	2.25	649.74	649.34	0.3969	2.858	650.60	0.40	648.05	647.65
	14	5	0.000	0.000	0.000	1.480	22.18	3.709	5.490	24	0.12	143	2.494	0.96	7.84	649.34	649.26	0.0589	1.748	652.05	0.17	647.65	647.48
F	1	2	0.080	0.200	0.016	0.016	20.00	3.889	0.062	8	0.50	41	2.652	0.26	0.93	649.68	649.68	0.0023	0.178	650.25	0.21	648.75	648.55
G	2	3	0.100	0.850	0.085	0.101	20.26	3.867	0.391	12	0.32	50	2.566	0.32	2.02	649.68	649.67	0.0120	0.497	651.90	0.16	648.55	648.39
H	3	4	0.170	0.850	0.145	0.246	20.58	3.839	0.943	12	0.32	147	2.566	0.95	2.02	649.67	649.57	0.0700	1.200	651.60	0.47	648.39	647.92
I	4	5	0.240	0.850	0.204	0.450	21.54	3.760	1.690	12	0.32	137	2.566	0.89	2.02	649.57	649.26	0.2251	2.152	651.70	0.44	647.92	647.48
J	5	6	0.360	0.850	0.306	2.236	22.43	3.690	8.249	24	0.12	107	2.494	0.71	7.84	649.26	649.12	0.1330	2.626	651.60	0.13	647.48	647.35
K	6	7	0.220	0.850	0.187	2.423	23.14	3.635	8.806	24	0.12	89	2.494	0.59	7.84	649.12	648.98	0.1515	2.803	652.45	0.11	642.90	642.82
	7	8	0.000	0.000	0.000	2.423	23.74	3.591	8.699	24	0.12	77	2.494	0.51	7.84	648.98	648.87	0.1479	2.769	653.35	0.09	647.35	647.26
L	8	9	0.120	0.850	0.102	2.525	24.25	3.553	8.970	24	0.13	44	2.596	0.28	8.16	648.87	648.80	0.1572	2.855	652.40	0.06	647.26	647.20

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL

STATE OF MICHIGAN — JASON R. LONGHURST — ENGINEER NO. 54075 — LICENSED PROFESSIONAL ENGINEER

PROJECT
Penske - Troy
1225 East Maple Road

CLIENT
Penske Automotive Group
2555 Telegraph Rd.
Bloomfield Hills, MI 48302
CONTACT
Mr. Jeff Anderson
Tel: 248-648-2574
janderson@penskeautomotive.com

PROJECT LOCATION
Part of the Southwest ¼ of Section 26
T.2 North, R.11 East
City of Troy, Oakland County, Michigan

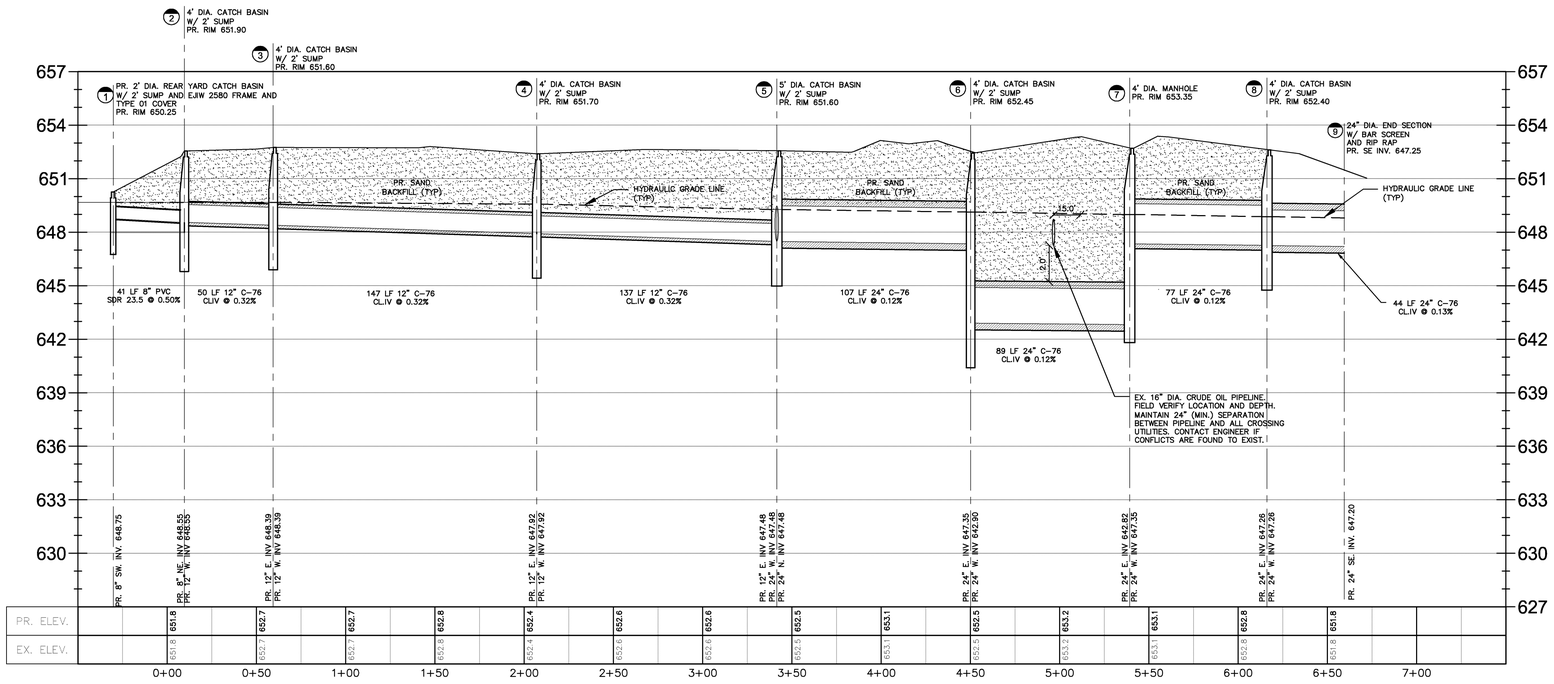
SHEET
Engineering Plan

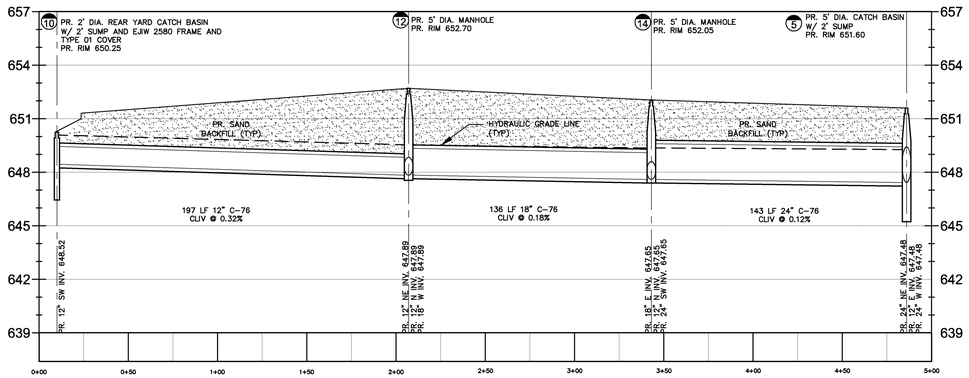
811 Know what's below Call before you dig.

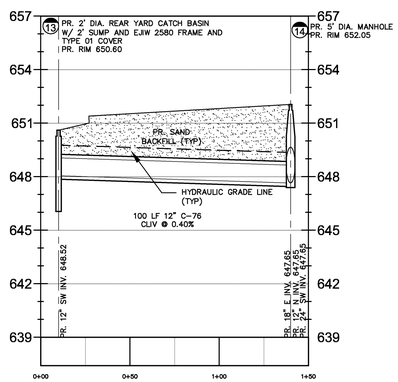
REVISIONS
09–26–14 ISSUED FOR ENGINEERING REVIEW
10–17–14 REVISED PER CITY REVIEW

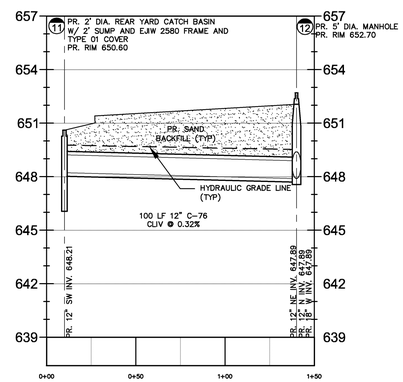
DRAWN BY: J. Klenk
DESIGNED BY: J. Longhurst
APPROVED BY: J. Longhurst
DATE: September 26, 2014
SCALE: 1" = 40'
40 20 0 20 40 60

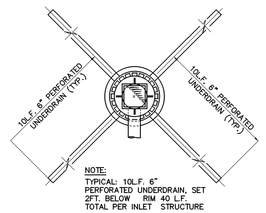
NFE JOB NO. F731-02
SHEET NO. C-3





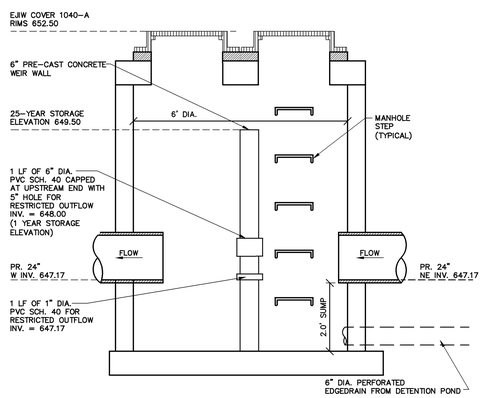






UNDERDRAIN DETAIL

N.T.S.



6' DIAMETER OVERFLOW MANHOLE DETAIL

N.T.S.

City of Troy Storm Water Management Calculations - 25 Year Storm Event

Determine Site Runoff Coefficient:

Proposed Land Use:	Runoff Coefficient:	Drainage Area:	
Pavement	0.90	3.380	Acres
Detention Basin	1.00	0.460	Acres
Landscape	0.20	1.110	Acres
Total Acreage:		4.950	Acres
Weighted Runoff Coefficient "C" Factor =		0.752	

Detention Calculation - Oakland County Method (Sites Less Than 5 Acres)
(25 Year Storm Event)

Contributing Acreage:	4.950	Acres
Allowable Outflow, Qa:	0.200	CFS / Acre
Runoff Coefficient, C:	0.752	Imperviousness
Maximum Allowable Outflow, Qo:	0.266	CFS / (Acre * Imperv.)
Ts Storage Time (25 Year):	149.149	Minutes
Vs Storage Volume (25 Year):	9,462.13	CFS / (Acre * Imperv.)
Vt Total Volume (25 Year):	35,236.96	Cubic Feet
Volume Required:	35,236.96	Cubic Feet
Volume Provided:	35,666.08	Cubic Feet

Restrictor Calculation:

ORIFICE RESTRICTOR		
FORMULA: Q = 0.62 * A *((2gh)^0.5)		
CONTRIBUTING ACREAGE:	4.95	ACRES
Qa ALLOWABLE OUTFLOW:	0.20	CFS/ACRE
STORAGE ELEVATION:	649.50	FEET
OUTLET ELEVATION:	646.90	FEET
DEPTH OF STORAGE	2.60	FEET
Qo MAXIMUM ALLOWABLE OUTFLOW:	0.990	CFS
REQUIRED RESTRICTOR AREA:	0.123	SQUARE FEET
MAXIMUM RESTRICTOR SIZE:	4.757	INCH DIAMETER

PROVIDE 5" RESTRICTOR PIPE (SEE PLAN FOR LOCATION)

Detention Storage Provided - Oakland County Method
(25 Year Storm Event)

Elevation	Area (S.F.)	Depth (FT.)	Volume (C.F.)	Total Volume (C.F.)
649.5	20213.66			
		0.5	9,646.45	35,666.08
649	18372.13			
		1	16,636.72	26,019.64
648	14901.3			
		0.8	9,382.92	9,382.92
647.2	8556			

Total Vol. Provided at H.W. Elevation (649.25): 35,666.08 Cubic Feet

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T.2 North, R.11 East
City of Troy, Oakland County, Michigan

SHEET
Utility Profiles

811 Know what's below Call before you dig.

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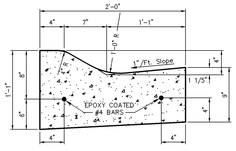
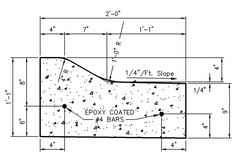
10-17-14 REVISED PER CITY REVIEW

DRAWN BY: J. Klenk
DESIGNED BY: J. Longhurst
APPROVED BY: J. Longhurst
DATE: September 26, 2014
SCALE: 1" = 40' / 1"=4'
40 20 0 20 40 60

NFE JOB NO. F731-02
SHEET NO. C-4



CONCRETE CURB & GUTTER TYPE 'C'
N.T.S.



CONCRETE CURB & GUTTER TYPE 'D'
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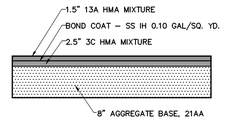

ASPHALT PAVEMENT SECTION
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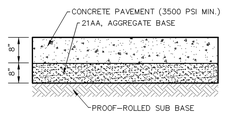

8" CONCRETE SECTION
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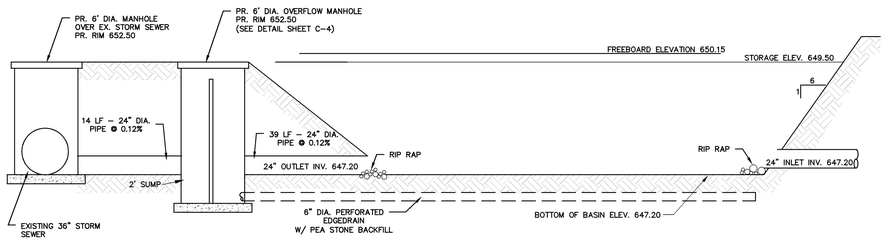
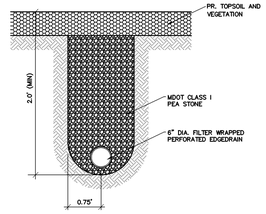


DETENTION BASIN CROSS-SECTION / OUTLET STRUCTURE DETAIL
N.T.S.



EDGEDRAIN DETAIL
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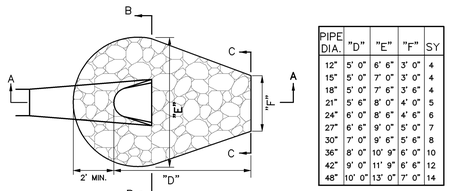
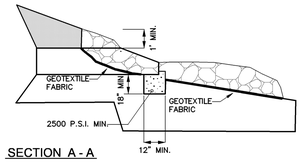


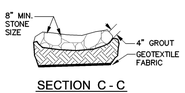
PLAN VIEW

PIPE DIA.	"D"	"E"	"F"	SY
12"	5' 0"	6' 6"	3' 0"	4
15"	5' 0"	7' 0"	3' 0"	4
18"	5' 0"	7' 6"	3' 6"	4
21"	5' 6"	8' 0"	4' 0"	5
24"	6' 0"	8' 6"	4' 6"	6
27"	6' 6"	9' 0"	5' 0"	7
30"	7' 0"	9' 6"	5' 6"	8
36"	8' 0"	10' 9"	6' 0"	10
42"	9' 0"	11' 9"	6' 6"	12
48"	10' 0"	13' 0"	7' 0"	14

SECTION B - B

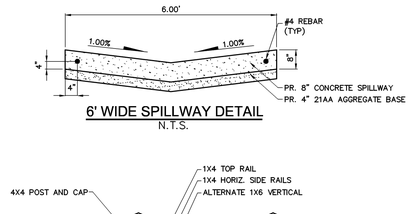


SECTION A - A

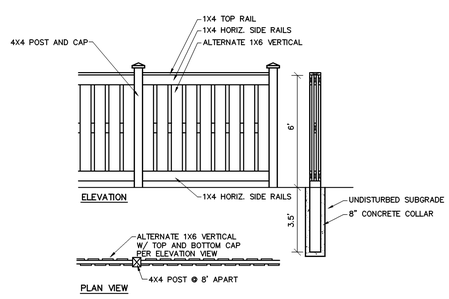


SECTION C - C

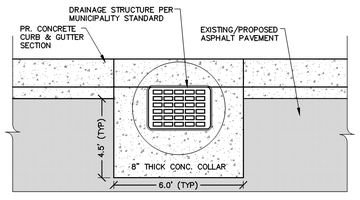
GROUTED STONE RIP-RAP
N.T.S.



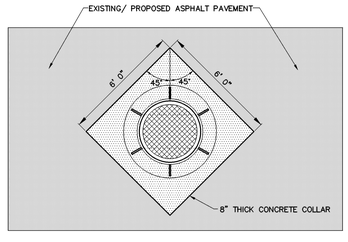
6' WIDE SPILLWAY DETAIL
N.T.S.



6' OBSCURING WOOD FENCE DETAIL
N.T.S.



DRAINAGE STRUCTURE BOXOUT DETAIL I
N.T.S.



DRAINAGE STRUCTURE BOXOUT DETAIL II
N.T.S.

GENERAL PAVING NOTES

PAVEMENT SHALL BE OF THE TYPE, THICKNESS AND CROSS SECTION AS INDICATED ON THE PLANS AND AS FOLLOWS:

CONCRETE:
PORTLAND CEMENT TYPE IA (AIR–ENTRAINED) WITH A MINIMUM CEMENT. CONTENT OF SIX SACKS PER CUBIC YARD, MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,500 PSI AND A SLUMP OF 1 1/2 TO 3 INCHES.

ASPHALT:
BASE COURSE – MDOT BITUMINOUS MIXTURE 3C; SURFACE COURSE – MDOT BITUMINOUS MIXTURE 13A; ASPHALT CEMENT PENETRATION GRADE 85–100, BOND COAT – MDOT SS–1H EMULSION AT 0.10 GALLON PER SQUARE YARD; MAXIMUM 2 INCH LIFT.

PAVEMENT BASE SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT. EXISTING SUB–BASE SHALL BE PROOF–ROLLED IN THE PRESENCE OF THE ENGINEER TO DETERMINE STABILITY.

ALL CONCRETE PAVEMENT, DRIVEWAYS, CURB & GUTTER, ETC., SHALL BE SPRAY CURED WITH WHITE MEMBRANE CURING COMPOUND IMMEDIATELY FOLLOWING FINISHING OPERATION.

ALL CONCRETE PAVEMENT JOINTS SHALL BE FILLED WITH HOT POURED RUBBERIZED ASPHALT JOINT SEALING COMPOUND IMMEDIATELY AFTER SAWCUT OPERATION. FEDERAL SPECIFICATION SS–S164.

ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, CURRENT EDITION.

ALL TOP OF CURB ELEVATIONS, AS SHOWN ON THE PLANS, ARE CALCULATED FOR A 6" CONCRETE CURB UNLESS OTHERWISE NOTED.

ALL SIDEWALK RAMPS, CONFORMING TO PUBLIC ACT NO. 8, 1993, SHALL BE INSTALLED AS INDICATED ON THE PLANS.

CONSTRUCTION OF A NEW OR RECONSTRUCTED DRIVE APPROACH CONNECTING TO AN EXISTING STATE OR COUNTY ROADWAY SHALL BE ALLOWED ONLY AFTER AN APPROVED PERMIT HAS BEEN SECURED FROM THE AGENCY HAVING JURISDICTION OVER SAID ROADWAY.

FOR ANY WORK WITHIN THE PUBLIC RIGHT–OF–WAY, THE CONTRACTOR SHALL PAY FOR AND SECURE ALL NECESSARY PERMITS AND LIKEWISE ARRANGE FOR ALL INSPECTION.

EXISTING TOPSOIL, VEGETATION AND ORGANIC MATERIALS SHALL BE STRIPPED AND REMOVED FROM PROPOSED PAVEMENT AREA PRIOR TO PLACEMENT OF BASE MATERIALS.

EXPANSION JOINTS SHOULD BE INSTALLED AT THE END OF ALL INTERSECTION RADII.

SIDEWALK RAMPS, CONFORMING TO PUBLIC ACT NO. 8, 1973, SHALL BE INSTALLED AS SHOWN AT ALL STREET INTERSECTIONS AND AT ALL BARRIER FREE PARKING AREAS AS INDICATED ON THE PLANS.

ALL PAVEMENT AREAS SHALL BE PROOF–ROLLED UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF BASE MATERIALS AND PAVING MATERIALS.

FILL AREAS SHALL BE MACHINE COMPACTED IN UNIFORM LIFTS NOT EXCEEDING 9 INCHES TO 98% OF THE MAXIMUM DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF THICK PROPOSED PAVEMENT.

UTILITIES

AT LEAST 72 HOURS (3 WORKING DAYS) PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY MISS DIG AND THE LOCAL COMMUNITY (WHERE APPLICABLE) TO STAKE LOCATIONS OF EXISTING UTILITIES.

THE CONTRACTOR SHALL EXPOSE AND VERIFY EXISTING UTILITIES FOR LOCATION, SIZE, DEPTH, MATERIAL AND CONFIGURATION PRIOR TO CONSTRUCTION. COSTS FOR EXPLORATORY EXCAVATION IS AN INCIDENTAL COST AND SHALL NOT BE CONSIDERED AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY EXISTING UTILITIES WHICH DO NOT MATCH THE PLANS AND SPECIFICATIONS PRIOR TO COMMENCING WORK. ANY FIELD CHAINGES OF THE PROPOSED UTILITIES SHALL BE APPROVED BY THE OWNER AND ENGINEER BEFORE THE WORK IS DONE.

THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES FROM DAMAGE. ANY SERVICE OR UTILITY DAMAGED OR REMOVED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR, IN CONFORMANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY PROVIDER.

DAMAGE TO PRIVATE PROPERTY

ALL SIDEWALKS, DRIVEWAYS, LAWNS, FENCING, TREES, SHRUBS, SPRINKLERS, LANDSCAPING, ETC., THAT ARE DAMAGED DURING CONSTRUCTION MUST BE REPAIRED OR REPLACED, IN KIND OR BETTER, BY THE CONTRACTOR. ALL STREET SIGNS, MAIL BOXES, ETC., REMOVED SHALL BE REPLACED IN KIND OR BETTER, BY THE CONTRACTOR. ALL THE REPAIRS OR REPLACEMENTS DUE TO THE CONTRACTOR'S WORK ARE TO BE INCLUDED IN THE CONTRACT PRICE(S) AND SHALL NOT BE AN EXTRA TO THE CONTRACT.

THE CONTRACTOR SHALL SECURE PERMISSION IN WRITING FROM ADJACENT PROPERTY OWNERS PRIOR TO ENTERING UPON ANY ADJOINING PROPERTIES, UNLESS OFFSITE PERMITS HAVE ALREADY BEEN OBTAINED BY THE OWNER AND ARE PART OF THE CONTRACT DOCUMENTS.

DEWATERING OF TRENCH AND EXCAVATIONS

IF NOT SPECIFICALLY PROVIDED FOR IN THE CONSTRUCTION DESIGN DOCUMENTS, THE DESIGN OR QUALITATIVE ANALYSIS OF GROUND WATER DEWATERING SYSTEMS IS BEYOND THE SCOPE OF DESIGN FOR THESE DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING AND PROVIDING APPROPRIATE EXCAVATION DEWATERING SYSTEMS FOR USE DURING CONSTRUCTION.

THE DEWATERING METHOD SELECTED BY THE CONTRACTOR WILL NOT ADVERSELY AFFECT ADJACENT PAVEMENTS OR STRUCTURES PRIOR TO BEGINNING DEWATERING CONDITIONS. MEANS AND METHODS OF DEWATERING ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF DEWATERING WILL BE CONSIDERED INCLUDED IN THE WORK OF CONSTRUCTING THE UNDERGROUND UTILITIES UNLESS SPECIFICALLY INDICATED OTHERWISE.

MEANS AND METHODS FOR PIPE CONSTRUCTION

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE MEANS AND METHODS FOR CONSTRUCTING THE UNDERGROUND PIPE SYSTEMS PROPOSED ON THE PLANS, INCLUDING BUT NOT LIMITED TO THE NEED FOR SHORING/BRACING OF TRENCHES, DEWATERING OF TRENCHES, SCHEDULING THE WORK AT OFF PEAK HOURS, AND/OR MAINTAINING EXISTING FLOWS THAT MAY BE ENCOUNTERED VIA PUMPING, BY–PASS PIPING OR OTHER MEANS. THE CONTRACTOR SHALL NOT BE PAID ANY ADDITIONAL COMPENSATION TO IMPLEMENT ANY MEANS AND METHODS TO SATISFACTORILY COMPLETE THE CONSTRUCTION.

PAVEMENT REMOVAL

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE THICKNESS OF THE PAVEMENT REMOVAL. PAVEMENT CORE SAMPLES ARE FOR INFORMATIONAL PURPOSES ONLY AS TO THE THICKNESS OF THE PAVEMENT AT THE LOCATION OF THE SAMPLE. THE OWNER AND ENGINEER MAKE NO REPRESENTATION, WARRANTY OR GUARANTY THAT THE SAMPLES ACCURATELY REFLECT THE PAVEMENT THICKNESS ON THE PROJECT.

IRRIGATION

THE CONTRACTOR SHALL MAINTAIN OR REPAIR ANY EXISTING IRRIGATION SYSTEMS WITHIN THE PROJECT AREA UNLESS THE DRAWINGS CALL FOR THE IRRIGATION SYSTEM TO BE REMOVED. THE OWNER AND NFE MAKE NO REPRESENTATIONS, WARRANTY OR GUARANTY AS TO THE CONDITION OF THE IRRIGATION SYSTEM. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT THE IRRIGATION SYSTEM DURING CONSTRUCTION ACTIVITIES. COMPENSATION FOR MAINTAINING OR REPAIRING EXISTING IRRIGATIONS SYSTEMS SHALL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE(S) UNLESS SPECIFIC IRRIGATION SYSTEM REPAIR ITEMS ARE INCLUDED IN THE ACCEPTED BID PROPOSAL.

SUB-SOIL CONDITIONS

ANY SOIL BORING PROVIDED BY THE OWNER AND/OR ENGINEER IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THIS INFORMATION IS NOT OFFERED AS EVIDENCE OF GROUND CONDITIONS THROUGHOUT THE PROJECT AND ONLY REFLECT THE GROUND CONDITIONS AT THE LOCATION OF THE BORING ON THE DATE THEY WERE TAKEN.

THE ACCURACY AND RELIABILITY OF THE SOIL LOGS AND REPORT ARE NOT WARRANTED OR GUARANTEED IN ANY WAY BY THE OWNER OR ENGINEER AS TO THE SUB–SOIL CONDITIONS FOUND ON THE SITE. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION AND SUB–SOIL INVESTIGATION AND SECURE OTHER SUCH INFORMATION AS THE CONTRACTOR CONSIDERS NECESSARY TO DO THE WORK PROPOSED AND IN PREPARATION OF THEIR BID.

SUBGRADE UNDERCUTTING AND PREPARTION

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE ANY AND ALL SOILS WHICH DO NOT CONFORM TO THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A SUBGRADE IN CONFORMANCE WITH THE PROJECT PLANS AND/OR SPECIFICATIONS. THE MEANS AND METHODS USED TO ACHIEVE THE REQUIRED RESULT SHALL REST SOLELY WITH THE CONTRACTOR.

ANY AREAS OF UNDERCUTTING THAT RESULT IN ADDITIONAL OR EXTRA WORK BECAUSE THEY COULD NOT BE IDENTIFIED BY THE CONTRACTOR'S PRE–BID SITE OBSERVATION OR ARE NOT SET FORTH IN THE PLANS AND SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE ANY EXTRA WORK IS PERFORMED. THE CONTRACTOR SHALL MAKE A REQUEST FOR ANY ADDITIONAL COMPENSATION FOR THE UNDERCUTTING IN WRITING AND THE REQUEST SHALL CONFORM TO THE CONTRACT'S CHAINGE ORDER PROVISIONS.

STRUCTURE BACKFILL

STRUCTURAL BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PROJECT PLANS, SPECIFICATIONS OR AS REQUIRED BY THE COMMUNITY, GOVERNMENT AGENCY OR UTILITY THAT HAS JURISDICTION OVER THE WORK.

TRENCH BACKFILL

TRENCH BACKFILL SHALL BE PLACED IN CONFORMANCE WITH THE PLANS AND/OR SPECIFICATIONS. TRENCH BACKFILL SHALL ALSO BE INSTALLED IN CONFORMANCE WITH THE COMMUNITY REQUIREMENTS OR AGENCY/UTILITY GOVERNING SAID TRENCH CONSTRUCTION. IN THE CASE OF CONFLICTING REQUIREMENTS, THE MORE STRINGENT SHALL APPLY.

EARTH BALANCE / GRADING

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHETHER THE SITE EARTHWORK BALANCES OR NOT. ANY EXCESS CUT MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR. IN A LIKE MANNER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT APPROVED FILL MATERIAL AND PLACE IT AS REQUIRED TO ATTAIN THE SITE GRADE AND COMPACTION REQUIREMENTS PER THE ENGINEER'S PLAN AND ALL APPLICABLE GOVERNMENTAL STANDARDS. THE ENGINEER AND OWNER MAKE NO REPRESENTATION AS TO THE QUANTITIES THAT MAY BE NEEDED TO CREATE A BALANCED EARTHWORK CONDITION OR THAT THE SITE EARTHWORK IS BALANCED.

SOIL EROSION / SEDIMENTATION CONTROL

THE CONTRACTOR SHALL OBTAIN THE REQUIRED SOIL EROSION PERMIT AND SATISFY ALL REGULATORY REQUIREMENTS FOR CONTROLLING SOIL EROSION AND SEDIMENT TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS. THE ENGINEER AND OWNER ARE NOT RESPONSIBLE FOR INSPECTION OR APPROVAL OF THE CONTRACTOR'S WORK IN CONNECTION WITH SATISFYING THE SOIL EROSION PERMIT REQUIREMENTS UNLESS SPECIFICALLY STATED IN THE CONTRACT DOCUMENTS.

Sunoco Logistics

General Restrictions
For working within the Pipeline Right of Way

The enclosed Restrictions must be followed if you plan any scope of work that would encroach on the right of way of our facilities.

We operate in fifteen States under the following names:

- Sunoco Pipeline L.P
  - Massachusetts
  - Michigan
  - New Jersey
  - New York
  - Ohio
  - Pennsylvania
  - Texas
- Mid Valley Pipeline
  - Arkansas
  - Kentucky
  - Louisiana
  - Michigan
  - Mississippi
  - Ohio
  - Tennessee
  - Texas
- Inland Corporation
  - Ohio
- Mag Tex
  - Texas
- West Texas Gulf
  - Texas

1. Detailed plans for proposed construction in accordance with Sunoco Pipeline L.P.s' ("SPLP") Engineering Restrictions must be submitted to SPLP's Engineering Department for review and approval to determine to what extent, if any, the pipeline right-of-way will be affected by the proposed construction and/or development. Submit plans to oxldesignreviews@sunocologistics.com
2. A driveway or roadway may cross the right-of-way and pipeline perpendicularly, but at no time will it be parallel to, over and within the right-of-way.
3. Buildings, swimming pools, sheds, decks, trees, shrubs or any obstruction of a permanent nature shall not be constructed, planted or placed within the right-of-way and easement. The width of the easements vary, but typically structures closer than (25') feet to any existing pipeline (50' easement) are not permitted. You must contact SPLP's Right-of-way Department at (610) 670-3322 (Eastern U.S) or (281) 637-6415 (Western U.S) to determine the easement width for a specific property.
4. Well's, leach beds, cesspools or sewer systems of any type shall not be placed within the right-of-way.
5. All underground facilities crossing the right-of-way shall cross under the existing pipeline with a minimum of 24-inches clearance. This includes, but is not limited to, sewer drain lines.
6. The earth cover over the pipelines shall be maintained and never changed in any manner without the express written permission of SPLP.
7. Any parking area placed over the pipeline with permission of SPLP shall be subject to an amendment to agreement entered into by subject parties prior to construction of same.
8. If heavy equipment is to cross the existing pipeline for any reason, it will be necessary for the crossing party to provide and maintain a ramp of sufficient material to protect said pipeline. Sunoco Logistics will make the decision as to how much fill and what other type of protective structure if any; will be required for the ramp. Upon completion of the construction and discontinuation of heavy equipment passage over the pipeline, the ramp may be removed.
9. **A SPLP representative must be present at the time that any work is done within Sunoco Pipeline L.P.'s right-of-way.**
10. No blasting is permitted within 300 feet of the pipeline. Anything less than 300 feet must have written approval of and instruction from SPLP's Engineering Department.
11. Should you have any questions or need additional information on the aforementioned Paragraphs 1 through 10, please call SPLP's Right-of-Way Department at (610) 670-3322 (Eastern U.S.) or (281) 637-6415 (Western U.S.).
12. State law requires you to contact your State One Call Center at least two or three days in advance, as required by your state, prior to any construction activity. The nationwide telephone number for your State One Call Center is "811", Individual State One Call Center numbers are also provided as Follows:

Arkansas	800-482-8998
Delaware	800-282-8555
Kentucky	800-752-6007
Louisiana	800-272-3020
Massachusetts	888-344-7233
Michigan	800-482-7171
Mississippi	800-227-6477
New Jersey	800-272-1000
New York	800-962-7962
New Mexico	800-321-2537
Ohio	800-362-2764
Oklahoma	800-522-6543
Pennsylvania	800-242-1776
Tennessee	800-351-1111
Texas	800-344-8377

DIG SAFELY!

- Dial 811 Call Before you Dig
- Wait the required time
- Respect the marks
- Dig Safely

811 Know what's below. Call before you dig.

13. In addition to the legally required notice reference above and to schedule a SPLP representative to witness work in the vicinity of the pipeline call the SPLP Office below.
Note: CONTACTING SPLP DIRECTLY DOES NOT RELIEVE OF THE LEGAL OBLIGATION TO NOTIFY YOUR STATE ONE CALL CENTER.

EASTERN U.S.		WESTERN U.S. ARKANSAS, KENTUCKY, LOUISIANA, MICHIGAN, MISSISSIPPI, NEW MEXICO, OHIO, OKLAHOMA, TENNESS and TEXAS	
MASSACHUSETTS		(AR, KY, LA, MI, MS, OH, TN) *Mid Valley Pipeline*	
East Boston	(617) 568-2249	Cygnet	(419) 655-5313
		Haynesville	(318) 624-1766
MICHIGAN		Hebron	(859) 371-4469 X10
Inkster	(313) 292-8850	Oxford	(662) 234-4114
		White Oak	(903) 759-2382
NEW JERSEY			
Trenton	(609) 586-1522	OKLAHOMA	
		Drumright	(918) 352-5089
NEW YORK		Enid	(580) 242-6614
Big Flats	(607) 562-8431	Maysville	(405) 867-5675
Caledonia	(585) 538-6160	Noble	(405) 613-6886
		Seminole	(405) 382-7144
OHIO			
Operating as Sunoco Pipeline		TEXAS	
Fostoria	(419) 435-3789	*Mag Tex Line*	
Toledo	(419) 691-4554	Aldine	(281) 931-1021
		Center	(936) 240-6753
Operating as Inland Marine Corporation		Hebert	(409) 722-8432
Bradley Road	(216) 214-5905	Longview	(903) 297-1311
Cygnet	(419) 376-0449	Sourlake	(409) 287-5000
Lima	(419) 619- 2612		
		Sunoco Pipeline/West Texas Gulf	
PENNSYLVANIA		Blum	(254) 874-5219
Altoona	(814) 947-8300	Breckenridge	(254) 559-7526
Fort Mifflin	(215) 365-6501	Childress	(806) 492-2350
Greensburg	(724) 834-2450	Colo. City	(325) 728-3162
Icedale	(610) 942-1906	Comyn	(254) 893-2405
Reading/Montello	(610) 670-3250	Corsicana	(903) 872-2269
Plymouth	(570) 696-1277	Hawley	(325) 537-2598
		Hearne	(979) 280-5272
		Longview	(903) 295-9203
		Merten	(806) 665-8082
		Nederland	(409) 721-4403
		Robert Lee	(325) 453-4315
		Snyder	(325) 573-3502
		Sourlake	(409) 287-5000

For additional information regarding pipeline safety please visit our website at www.sunocologistics.com/Public-Awareness or scan the below code with your smart phone.

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL

STATE OF MICHIGAN
JASON R. LONGHURST
ENGINEER
NO. 54075
LICENSED PROFESSIONAL ENGINEER

PROJECT
Penske - Troy
1225 East Maple Road

CLIENT
Penske Automotive Group
2555 Telegraph Rd.
Bloomfield Hills, MI 48302
CONTACT
Mr. Jeff Anderson
Tel: 248-648-2574
janderson@penskeautomotive.com

PROJECT LOCATION
Part of the Southwest ¼ of Section 26
T.2 North, R.11 East
City of Troy, Oakland County, Michigan

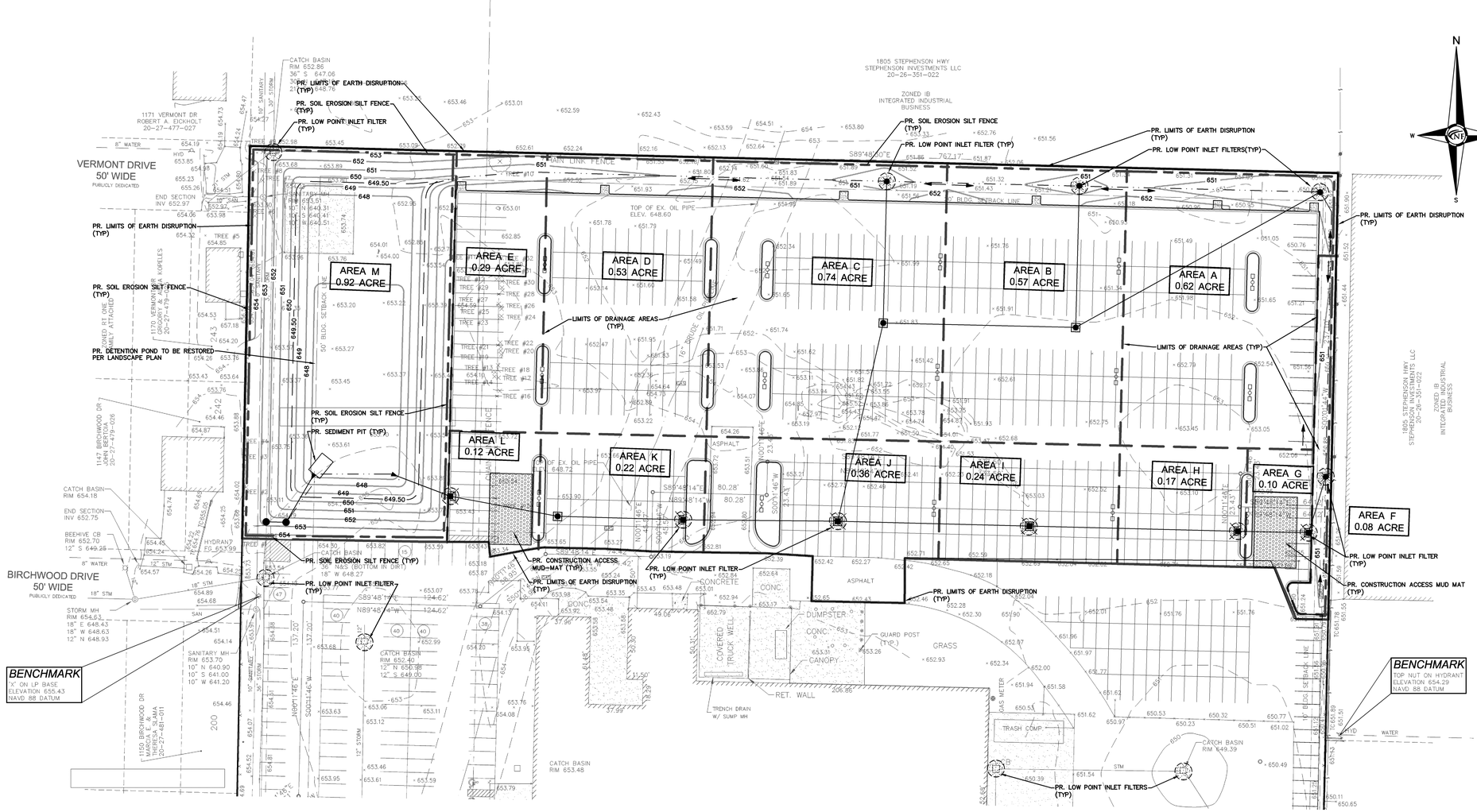
SHEET
Notes and Details Plan

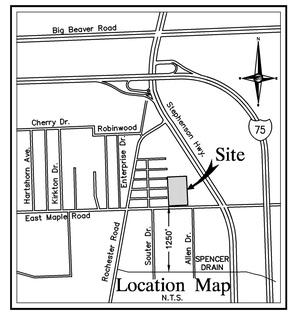
811 Know what's below. Call before you dig.

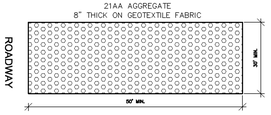
REVISIONS
09–26–14 ISSUED FOR ENGINEERING REVIEW
10–17–14 REVISED PER CITY REVIEW

DRAWN BY:
J. Klenk
DESIGNED BY:
J. Longhurst
APPROVED BY:
J. Longhurst
DATE:
September 26, 2014
SCALE: N.T.S.
40 20 0 20 40 60

NFE JOB NO. F731-02
SHEET NO. C-5







CONSTRUCTION ACCESS MUD-MAT

SOIL EROSION CONTROL

CUTTING, FILLING AND GRADING SHALL BE MINIMIZED AND THE NATURAL TOPOGRAPHY OF THE SITE SHALL BE PRESERVED TO THE MAXIMUM POSSIBLE EXTENT, EXCEPT WHERE SPECIFIC FINDINGS DEMONSTRATE THAT MAJOR ALTERATIONS WILL STILL MEET THE PURPOSES AND REQUIREMENTS OF THIS ORDINANCE.

DEVELOPMENT SHALL BE STAGED TO KEEP THE EXPOSED AREAS OF SOIL AS SMALL AS PRACTICABLE.

SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED BETWEEN THE DISTURBED AREA AND ANY WATERCOURSES, INCLUDING RIVERS, STREAMS, CREEKS, LAKES, PONDS AND OTHER WATERCOURSES; WETLANDS; OR ROADWAYS ON OR NEAR THE SITE.

SEDIMENT RESULTING FROM ACCELERATED SOIL EROSION SHALL BE REMOVES FROM RUNOFF WATER BEFORE THAT WATER LEAVES THE SITE.

TEMPORARY AND PERMANENT SOIL EROSION CONTROL MEASURES DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF WATER AROUND, THROUGH, OR AWAY FROM THE SITE SHALL BE DESIGNED TO LIMIT THE WATER FLOW TO A NON-EROSIVE VELOCITY.

TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE REMOVED AFTER PERMANENT SOIL EROSION CONTROL MEASURES HAVE BEEN IMPLEMENTED. ALL SITES SHALL BE STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES.

IF LAKES, PONDS, CREEKS, STREAMS, OR WETLANDS ARE LOCATED ON OR NEAR THE SITE, EROSION CONTROL MEASURES WHICH DIVERT RUNOFF AND TRAP SEDIMENT MUST BE PROVIDED AT STRATEGIC LOCATIONS. STRAW BALE BERMS MAY BE USED AS TEMPORARY STORMWATER DIVERSION STRUCTURES, BUT WILL NOT BE CONSIDERED SUFFICIENT FOR TRAPPING SEDIMENT. THE USE OF SEDIMENT BASINS, FILTER FABRIC, VEGETATED BUFFER STRIPS, AND ROCK FILTERS IN LIEU OF STRAW BALE BERMS SHALL BE STRONGLY ENCOURAGED. OTHER MEASURES MAY BE REQUIRED IF REASONABLY DETERMINED TO BE NECESSARY TO PROTECT A WATERCOURSE OR WETLAND.

WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHAINGE HAS BEEN COMPLETED OR WHEN SIGNIFICANT EARTH CHAINGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED.

PERMANENT EROSION CONTROL MEASURES FOR ALL SLOPES, CHAINNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 (FIFTEEN) CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHAINGE HAS BEEN COMPLETED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED.

VEGETATED BUFFER STRIPS SHALL BE CREATED OR RETAINED ALONG THE EDGES OF ALL LAKES, PONDS, CREEKS, STREAMS, OTHER WATERCOURSES, OR WETLANDS.

EROSION AND SEDIMENTATION CONTROL MEASURES SHALL RECEIVE REGULAR MAINTENANCE TO ASSURE PROPER FUNCTIONING.

ALL GRADING PLANS AND SPECIFICATIONS, INCLUDING EXTENSIONS OF PREVIOUSLY APPROVED PLANS, SHALL INCLUDE PROVISIONS FOR EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH, BUT NOT LIMITED TO, THE STANDARDS CONTAINED IN THE "CITY OF TROY DEVELOPMENT / ENGINEERING STANDARDS".

NOTES

REFER TO THE CITY OF TROY SOIL EROSION AND SEDIMENTATION CONTROL DETAIL SHEET FOR ALL ADDITIONAL NOTES & DETAILS (TYP)

THE DISTANCE TO TO THE NEAREST BODY OF WATER, SPENCER DRAIN, IS 1,250 FEET.

THE TOTAL AREA OF EARTH DISRUPTION IS 4.81 ACRES.

THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE CONTRACTOR.

A SOIL EROSION PERMIT IS REQUIRED FROM THE CITY OF TROY ENGINEERING DEPARTMENT.

SOIL DATA

THIS SITE CONSISTS OF 95.8% 59: URBAN LAND AND 4.2% 63A: URBAN LAND--THETFORD COMPLEX, 0 TO 3 PERCENT SLOPES.

BASED ON DATA PROVIDED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE.

ESTIMATED QUANTITIES

SOIL EROSION

DESCRIPTION	QUANTITY	UNITS
SILT FABRIC FENCING	1,760	L.F.
INLET FILTER	15	EA.
CONSTRUCTION ACCESS MUD-MAT	333	SY.

CONSTRUCTION SEQUENCE / TIMING SCHEDULE

1.	INSTALL PERIMETER FILTER FABRIC FENCING AND INLET FILTERS WHERE REQUIRED.	OCT. 2014
2.	MASS GRADE SITE.	OCT. 2014
3.	COMMENCE UNDERGROUND UTILITY WORK.	OCT. 2014
4.	INSTALL INLET FILTERS ON PROPOSED DRAINAGE STRUCTURES.	OCT. 2014
5.	FILL IN SEDIMENTATION TRAPS AND PAVE SITE.	NOV. 2014
6.	COMPLETE ALL LANDSCAPING AND RESTORATION ACTIVITY.	NOV. 2015
7.	JET VAC NEW STORM SEWER SYSTEM AS REQUIRED.	DEC. 2015
8.	REMOVE ALL TEMPORARY SOIL EROSION MEASURES.	DEC 2015

LEGAL DESCRIPTION

PARCEL 1 (TAX ITEM NO. 20-26-351-024):
PART OF THE SOUTHWEST 1/4 OF SECTION 26 AND A PART OF THE SOUTHEAST 1/4 OF SECTION 27, TOWN 2 NORTH, RANGE 11 EAST, CITY OF TROY, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF SECTION 27; THENCE NORTH 00 DEGREES 13 MINUTES 23 SECONDS EAST A DISTANCE OF 43.00 FEET TO THE POINT OF BEGINNING; THENCE NORTH 89 DEGREES 45 MINUTES 00 SECONDS WEST, A DISTANCE OF 106.51 FEET; THENCE NORTH 29 DEGREES 36 MINUTES 52 SECONDS WEST, A DISTANCE OF 67.03 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, DISTANCE OF 327.77 FEET; THENCE NORTH 50 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 20.61 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 137.20 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 124.62 FEET; THENCE NORTH 50 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 58.95 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 74.42 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 45.57 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 80.28 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 23.43 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, DISTANCE OF 333.50 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 23.43 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 14 SECONDS EAST, A DISTANCE OF 64.12 FEET; THENCE SOUTH 00 DEGREES 01 MINUTES 44 SECONDS WEST, A DISTANCE OF 619.94 FEET TO A POINT ON THE NORTH RIGHT OF WAY OF MAPLE ROAD (86 FEET WIDE); THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 599.85 FEET TO THE POINT OF BEGINNING.

PARCEL 2 (TAX ITEM NO. 20-26-351-023):
PART OF THE SOUTHWEST ¼ OF SECTION 26 AND PART OF THE SOUTHEAST ¼ OF SECTION 27, TOWN 2 NORTH, RANGE 11 EAST, CITY OF TROY, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF SECTION 27; THENCE NORTH 00 DEGREES 13 MINUTES 23 SECONDS EAST, A DISTANCE OF 43.00 FEET; THENCE NORTH 89 DEGREES 45 MINUTES 00 SECONDS WEST, A DISTANCE OF 106.51 FEET TO THE POINT OF BEGINNING; THENCE NORTH 89 DEGREES 45 MINUTES 00 SECONDS WEST, A DISTANCE OF 58.73 FEET TO THE POINT ON THE EASTERLY LINE OF STUMPF'S BEECH GROVE SUBDIVISION, ACCORDING TO THE PLAT THEREOF AS RECORDED IN LIBER 32, PAGE 11 OF PLATS, OAKLAND COUNTY RECORDS; THENCE NORTH 00 DEGREES 06 MINUTES 34 SECONDS WEST, A DISTANCE OF 856.83 FEET; THENCE SOUTH 89 DEGREES 48 MINUTES 30 SECONDS EAST, A DISTANCE OF 767.17 FEET; THENCE SOUTH 00 DEGREES 01 MINUTES 44 SECONDS WEST., A DISTANCE OF 237.10 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 64.12 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 23.43 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 333.50 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 23.43 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 80.28 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE 45.57 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 74.42 FEET; THENCE SOUTH 50 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 58.95 FEET; THENCE NORTH 89 DEGREES 48 MINUTES 14 SECONDS WEST, A DISTANCE OF 124.62 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 137.20 FEET; THENCE SOUTH 50 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 20.61 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 327.77 FEET; THENCE SOUTH 29 DEGREES 36 MINUTES 52 SECONDS EAST, A DISTANCE OF 67.03 FEET TO THE POINT OF BEGINNING.

LEGEND

- INDICATES LIMITS OF SILT FABRIC FENCE
- INDICATES LIMITS OF DRAINAGE DISTRICT AREA
- INDICATES LIMITS OF SOIL DISRUPTION
- INDICATES LOW POINT INLET FILTER
- AREA A 0.00 ACRE — INDICATES DRAINAGE DISTRICT AREA

NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS

NOWAK & FRAUS ENGINEERS
46777 WOODWARD AVE.
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

SEAL

STATE OF MICHIGAN
JASON R. LONGHURST
ENGINEER
NO. 54075
LICENSED PROFESSIONAL ENGINEER

PROJECT
Penske - Troy
1225 East Maple Road

CLIENT
Penske Automotive Group
2555 Telegraph Rd.
Bloomfield Hills, MI 48302
CONTACT
Mr. Jeff Anderson
Tel: 248-648-2574
janderson@penskeautomotive.com

PROJECT LOCATION
Part of the Southwest ¼ of Section 26
T.2 North, R.11 East
City of Troy, Oakland County, Michigan

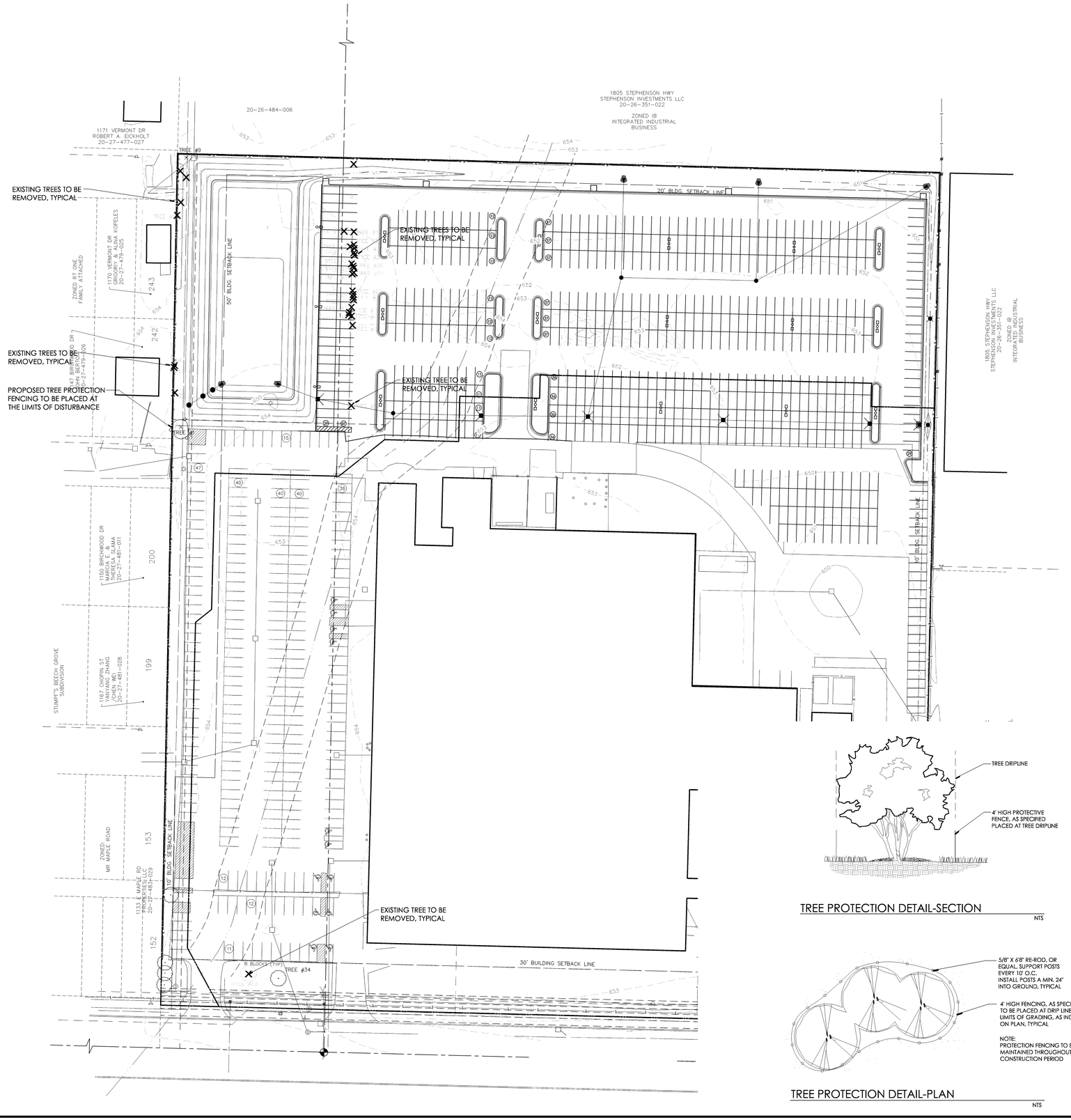
SHEET
Soil Erosion / Drainage Area Plan

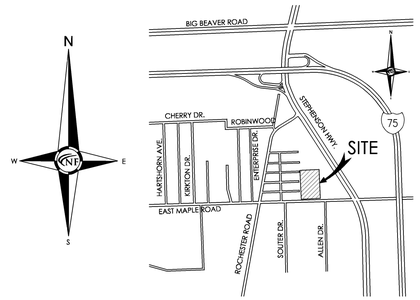
811 Know what's below Call before you dig.

REVISIONS
09-26-14 ISSUED FOR ENGINEERING REVIEW
10-17-14 REVISED PER CITY REVIEW

DRAWN BY: J. Klenk
DESIGNED BY: J. Longhurst
APPROVED BY: J. Longhurst
DATE: September 26, 2014
SCALE: 1" = 50'
50 25 0 25 50 75

NFE JOB NO. F731-02
SHEET NO. C-6





LOCATION MAP

N.T.S.

GENERAL TREE PROTECTION NOTES

1. APPROVED TREE PROTECTION SHALL BE ERECTED PRIOR TO THE START OF CONSTRUCTION ACTIVITIES, AND SHALL REMAIN IN PLACE UNTIL THE IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
2. ALL UNDERSTORY VEGETATION WITHIN THE LIMITS OF PROTECTIVE FENCING SHALL BE PRESERVED.
3. NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY TREE DESIGNATED TO REMAIN, INCLUDING BUT NOT LIMITED TO, PLACING SOLVENTS, BUILDING MATERIALS, CONSTRUCTION EQUIPMENT, OR SOIL DEPOSITS WITHIN THE DRIP LINE.
4. WHERE GROUPINGS OF TREES ARE TO REMAIN, TREE FENCING SHALL BE PLACED AT THE LIMITS OF GRADING LINE.
5. DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY DEVICE OR WIRE TO ANY TREE, SCHEDULED TO REMAIN.
6. ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE OF THE PROTECTIVE FENCING.
7. SWALES SHALL BE ROUTED TO AVOID THE AREA WITHIN THE DRIP LINES OF PROTECTED TREES.
8. TREES LOCATED ON ADJACENT PROPERTIES THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED.
9. ROOT ZONES OF PROTECTED TREES SHOULD BE SURROUNDED WITH RIGIDLY STAKED FENCING.
10. THE PARKING OF IDLE AND RUNNING EQUIPMENT SHALL BE PROHIBITED UNDER THE DRIP LINE OF PROTECTED TREES.
11. THE STRIPPING OF TOPSOIL FROM AROUND PROTECTED TREES SHALL BE PROHIBITED.
12. ALL TREES TO BE REMOVED SHALL BE CUT AWAY FROM TREES TO REMAIN.
13. THE GRUBBING OF UNDERSTORY VEGETATION WITHIN CONSTRUCTION AREAS SHOULD BE CLEARED BY CUTTING VEGETATION AT THE GROUND WITH A CHAIN SAW OR MINIMALLY WITH A HYDRO-AXE.
14. THE CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT PER ORDINANCE GUIDELINES, FOR THE DAMAGE OR REMOVAL OF ANY TREE DESIGNATED TO REMAIN.
15. TREES TO BE REMOVED SHALL BE FIELD VERIFIED, EVALUATED AND FLAGGED FOR REMOVAL, BY THE LANDSCAPE ARCHITECT OR FORESTER, ONLY AS DIRECTED BY THE OWNER OR OWNERS REPRESENTATIVE.

TREE PRESERVATION SUMMARY

TOTAL TREES SURVEYED:	38
TOTAL TREES TO BE REMOVED:	32
MINUS DEAD TREES:	-3
NET TREES TO BE REMOVED:	29

TREE PROTECTION LEGEND

#9 — EXISTING TREES TO REMAIN

#18 — EXISTING TREES TO BE REMOVED

PROPOSED TREE PROTECTION FENCING

TREE PROTECTION DETAIL-SECTION

NTS

TREE PROTECTION DETAIL-PLAN

NTS

Tree Inventory List

Client Name:	Penske
Job Location:	1225 E. Maple, Troy
Date Completed:	9/3/2014

Condition Description Notes:
"Good" - no observed structural defects"
"Fair" - minor structural defects, marginal form, some insect activity noted"
"Poor" - major structural defects, poor form, insect infested"

"Structural defects may include decayed wood, cracks, root problems, weak branch unions cankers, poor tree architecture, dead/failed branches due to various causes.

Tree #	Botanical Name	Common Name	Dia.	Type	Other Dia.	Condition
1	Ulmus pumila	Siberian Elm	15			Good
X2	Acer negundo	Boxelder	10			Poor
X3	Acer negundo	Boxelder	9			Poor
X4	Acer negundo	Boxelder	10			Poor
X5	Acer negundo	Boxelder	11			Poor
X6	Acer negundo	Boxelder	9	Twin	4	Poor
X7	Ulmus pumila	Siberian Elm	8			Poor
X8	Acer negundo	Boxelder	5			Poor
X9	Acer negundo	Boxelder	5			Poor
X10	Populus deltoides	Eastern Cottonwood	13			Poor
X11	Populus deltoides	Eastern Cottonwood	18			Fair
X12	Populus deltoides	Eastern Cottonwood	15	Twin	13	Fair
X13	Populus deltoides	Eastern Cottonwood	17			Poor
X14	Populus deltoides	Eastern Cottonwood	22			Fair
X15	Ulmus pumila	Siberian Elm	10			Poor
X16	Populus deltoides	Eastern Cottonwood	18			Fair
X17	Populus deltoides	Eastern Cottonwood	15	Twin	15	Poor
X18	Populus deltoides	Eastern Cottonwood	20			Good
X19	Populus deltoides	Eastern Cottonwood	19	Multiple	16, 9	Fair
X20	Populus deltoides	Eastern Cottonwood	10			Poor
X21	Populus deltoides	Eastern Cottonwood	16			Good
X22	Populus deltoides	Eastern Cottonwood	14			Fair
X23	Populus deltoides	Eastern Cottonwood	14			Fair
X24	Populus deltoides	Eastern Cottonwood	12			Fair
X25	Populus deltoides	Eastern Cottonwood	12			Fair
X26	Populus deltoides	Eastern Cottonwood	16			Good
X27	Populus deltoides	Eastern Cottonwood	17			Fair
X28	Populus deltoides	Eastern Cottonwood	17			Dead
X29	Populus deltoides	Eastern Cottonwood	12			Dead
X30	Populus deltoides	Eastern Cottonwood	16	Twin	13	Good
X31	Populus deltoides	Eastern Cottonwood	11			Fair
X32	Populus deltoides	Eastern Cottonwood	28			Fair
X33	Acer platanoides	Norway maple	6			Dead
34	Acer platanoides	Norway maple	8			Good
35	Ulmus pumila	Siberian Elm	12			Fair
36	Pinus nigra	Austrian Pine	9			Fair
37	Pinus nigra	Austrian Pine	9			Good
38	Pinus nigra	Austrian Pine	16			Good

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SEAL

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CLIENT
Penske Automotive Group
2555 Telegraph Rd.
Bloomfield Hills, MI 48302
CONTACT
Mr. Jeff Anderson
Tel: 248-648-2574
janderson@penskeautomotive.com

PROJECT LOCATION
Part of the Southwest ¼
of Section 26
T.2 North, R.11 East
City of Troy, Oakland County,
Michigan

SHEET
Tree Preservation Plan

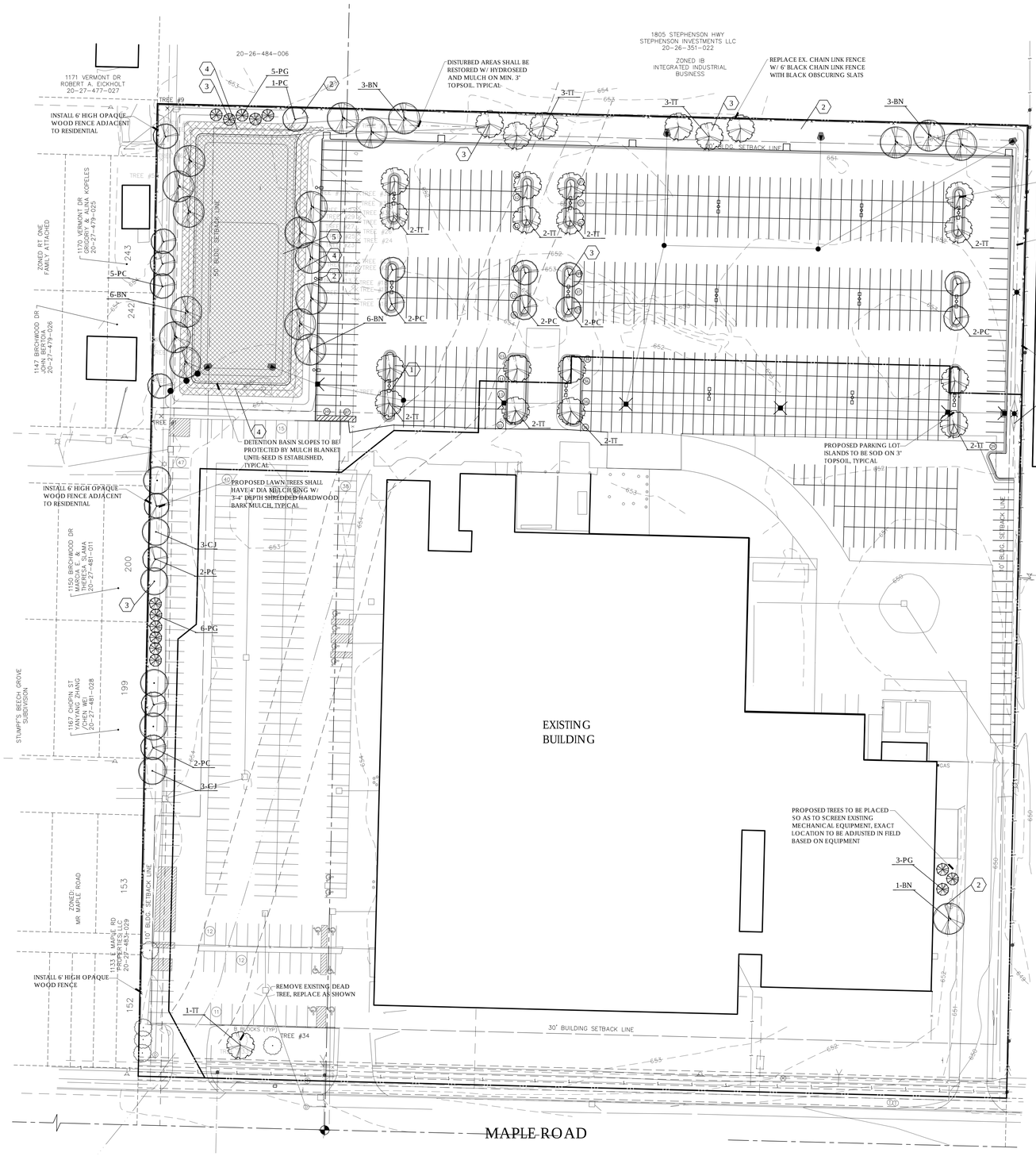
811
Know what's below
Call before you dig.

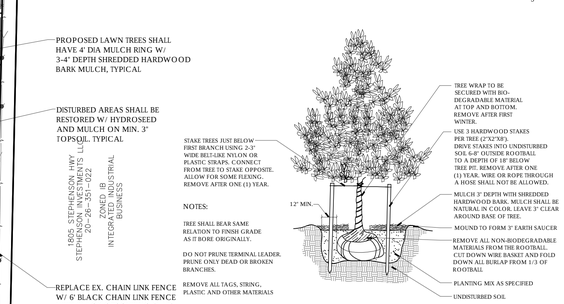
REVISIONS
09-15-2014 ISSUED FOR SITE PLAN REVIEW
10-17-2014 REVISED PER CITY REVIEW

DRAWN BY:
G.Ostrowski
DESIGNED BY:
G.Ostrowski
APPROVED BY:
G.Ostrowski
DATE:
September 15, 2014
SCALE: 1" = 50'

50 25 0 25 50 75

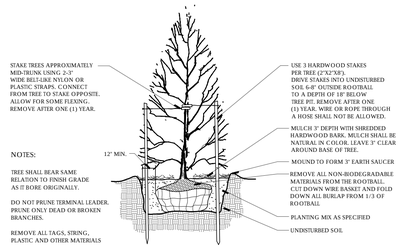
NFE JOB NO. F731-02
SHEET NO. L-1





DECIDUOUS TREE PLANTING DETAIL

NTS



EVERGREEN TREE PLANTING DETAIL

NTS

GENERAL SEED NOTE:

ALL LAWN AREAS DESIGNATED TO BE SEEDED, SHALL BE HYDRO-SEEDED WITH SPECIFIED BLENDS, AND STABILIZED WITH WOOD CELLULOSE FIBER MULCH (2,000 LBS PER ACRE) . IN AREAS SUBJECT TO EROSION, SEEDED LAWN SHALL BE FURTHER STABILIZED WHERE NECESSARY WITH BIODEGRADABLE EROSION BLANKET AND STAKED UNTIL ESTABLISHED. ALL SEED SHALL BE APPLIED OVER A MINIMUM 3" PREPARED TOPSOIL, AND SHALL BE KEPT MOIST AND WATERED DAILY UNTIL ESTABLISHED.
SEEDING INSTALLATION SHALL OCCUR ONLY:
SPRING: APRIL1 TO JUNE1
FALL: AUGUST 15 TO OCTOBER 15

TYPICAL SEEDED LAWN MIX:

ALL LAWN AREAS DESIGNATED TO BE SEEDED, SHALL BE HYDROSEEDED WITH TYPICAL DROUGHT TOLERANT, DURABLE BLENDED SEED MIX, AT A RATE OF 220 LBS PER ACRE
MIX IS COMPRISED OF
- 30% NIT HAWK PERENNIAL RYE
- 30% KENTUCKY BLUEGRASS
- 20% CREEPING RED FESCUE
- 10% MERT KENTUCKY BLUEGRASS
- 10% NEWPORT KENTUCKY BLUEGRASS

LOW-GROW LAWN MIX:

ALL LAWN AREAS DESIGNATED TO BE SEEDED, SHALL BE HYDROSEEDED WITH LOW-GROW LAWN SEED MIX, AT A RATE OF 5 LBS/1,000 S.F.
SEED AVAILABE FROM:
NATIVESCAPES, LLC
(T) 1-517-456-7245
* MIX IS COMPRISED OF
- 22.8% PENNLAWN RED FESCUE
- 22.5% CREEPING RED FESCUE
- 21.7% CHEWINGS FESCUE
- 11.8% VICTORY II CHEWINGS FESCUE
- 9.8% SPARTAN HEAD FESCUE
- 9.9% ALAY SHEEPS FESCUE

GENERAL SOD NOTE:

ALL LAWN AREAS DESIGNATED TO BE SODDED, SHALL BE SODDED WITH A BLENDED DURABLE BLUEGRASS SOD, TYPICALLY GROWN IN THE REGION. ALL TURF SHALL BE PLACED ON A MINIMUM 3" PREPARED TOPSOIL, AND WATERED DAILY UNTIL ESTABLISHMENT. IN AREAS SUBJECT TO EROSION, SODDED LAWN SHALL BE STABILIZED WHERE NECESSARY, AND LAID PERPENDICULAR TO SLOPES
SOD INSTALLATION SHALL OCCUR ONLY:
SPRING: APRIL1 TO JUNE1
FALL: AUGUST 15 TO OCTOBER 15

DETENTION BASIN FLOOR MIX

*CONTAINS AT LEAST 12 WILDFLOWERS AND 4 GRASSES

WILDFLOWERS	NATIVE GRASSES
NEW ENGLAND ASTER	BIG BLUSTEM
PALE INDIAN PLANTAIN	CANADA WILD RYE
JOE PYE WEED	DARK GREEN BULRUSH
BONESET	INDIAN GRASS
OX EYE SUNFLOWER	PRAIRIE CORD GRASS
DENSE BLAZINGSTAR	WETLAND SEDGES
GREAT BLUE LOBELIA	
CARDINAL FLOWER	TEMPORARY GRASSES
GREEN-HEADED CONEFLOWER	SEED OATS
BLACK-EYED SUSAN	ANNUAL RYE
CUPPLANT	WINTER WHEAT
OHIO GOLDENROD	AMERICAN SLOUGH GRASS
BLUE VERVAIN	
CULVER'S ROOT	
IRONWEED	
YELLOW CONEFLOWER	

RECOMMENDED SEEDING RATE: 35-40 LBS/ACRE

SEED MIX AVAILABLE:
NATIVESCAPE, LLC
PO BOX 122
MANCHESTER, MI 48158
T 517.456.9696

PLANT SCHEDULE

KEY	QTY	BOTANICAL/COMMON NAME	SIZE	SPACING	ROOT	COMMENT
TREES						
BN	19	Betula nigra River Birch	14' HT	SEE PLAN	B&B	CLUMP FORM, 3 CANES
CJ	6	Cercidiphyllum japonicum Katsura Tree	12' HT	SEE PLAN	B&B	CLUMP FORM, 3 CANES
PG	14	Picea glauca 'Densata' Black Hills Spruce	8' HT	SEE PLAN	B&B	BRANCHED TO GROUND
PC	18	Pyrus calleryana 'Cleveland Select' Cleveland Select Pear	2.5" CAL	SEE PLAN	B&B	FULLY BRANCHED HEADS
TT	22	Tilia tomentosa 'Sterling' Sterling Linden	2.5" CAL	SEE PLAN	B&B	FULLY BRANCHED HEADS

LANDSCAPE REQUIREMENTS

SITE AREA: 656,586.41 S.F. OR 15.07 ACRES

GENERAL SITE LANDSCAPE
20% OF THE TOTAL SITE AREA SHALL BE LANDSCAPED
656,586.41 S.F. X 20% = 131,317.28 S.F. REQUIRED
140,105.88 S.F. PROVIDED (21.33%)

PARKING LOT INTERIOR REQUIREMENTS
1 TREE PER 8 SPACES, MIN 200 S.F. PER ISLAND
REQUIRED: 565 SPACES / 8 = 70.63 OR 71 TREES REQUIRED
PROVIDED: 24 TREES IN PARKING LOT, 47 AROUND PERIMETER

GENERAL LANDSCAPE NOTES

1. LANDSCAPE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, THE PLAN SHALL GOVERN QUANTITIES. CONTACT THE LANDSCAPE ARCHITECT WITH ANY CONCERNS.
2. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON-SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ANY DAMAGE OR INTERUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES, AND SHALL REPORT ANY UNACCEPTACBLE SITE CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT.
4. PLANTS SHALL BE FULL, WELL-BRANCHED, AND IN HEALTHY VIGOROUS GROWING CONDITION.
5. PLANTS SHALL BE WATERED BEFORE AND AFTER PLANTING IS COMPLETE.
6. ALL TREES MUST BE STAKED, FERTILIZED AND MULCHED AND SHALL BE GUARANTEED TO EXHIBIT A NORMAL GROWTH CYCLE FOR AT LEAST ONE (1) YEAR FOLLOWING PLANTING.
7. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE 'AMERICAN STANDARDS FOR NURSERY STOCK'.
8. CONTRACTOR WILL SUPPLY FINISHED GRADE AND EXCAVATE AS NECESSARY TO SUPPLY PLANT MIX DEPTH IN ALL PLANTING BEDS AS INDICATED IN PLANT DETAILS AND A DEPTH OF 4" IN ALL LAWN AREAS.
9. PROVIDE CLEAN BACKFILL SOIL, USING MATERIAL STOCKPILED ON-SITE. SOIL SHALL BE SCREENED AND FREE OF DEBRIS, FOREIGN MATERIAL, AND STONE.
10. SLOW-RELEASE FERTILIZER SHALL BE ADDED TO THE PLANT PITS BEFORE BEING BACKFILLED. APPLICATION SHALL BE AT THE MANUFACTURERS RECOMMENDED RATES.
11. AMENDED PLANT MIX (PREPARED TOPSOIL) SHALL CONSIST OF 1/3 SCREENED TOPSOIL, 1/3 SAND, AND 1/3 'DAIRY DOO' COMPOST, MIXED WELL AND SPREAD TO A DEPTH AS INDICATED IN PLANTING DETAILS.
12. ALL PLANTINGS SHALL BE MULCHED WITH SHREDDED HARDWOOD BARK, SPREAD TO A DEPTH OF 3" FOR TREES AND SHRUBS, AND 2" ON ANNUALS, PERENNIALS, AND GROUNDCOVER PLANTINGS. MULCH SHALL BE FREE FROM DEBRIS AND FOREIGN MATERIAL, AND PIECES ON INCONSISTENT SIZE.
13. NO SUBSTITUTIONS OR CHANGES OF LOCATION, OR PLANT TYPE SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
14. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS PRIOR TO INSTALLATION.
15. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL IN A VERTICAL CONDITION THROUGHOUT THE GUARANTEED PERIOD.
16. THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE SHALL HAVE THE RIGHT TO REJECT ANY WORK OR MATERIAL THAT DOES NOT MEET THE REQUIREMENTS OF THE PLANS AND OR SPECIFICATIONS.
17. THE LANDSCAPE CONTRACTOR SHALL SEED AND MULCH OR SOD (AS INDICATED ON PLANS) ALL AREAS DESIGNATED AS SUCH ON THE PLANS, THROUGHOUT THE CONTRACT LIMITS. FURTHER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING AREAS DISTURBED DURING CONSTRUCTION, NOT IN THE CONTRACT LIMITS, TO EQUAL OR GREATER CONDITION.
18. ALL LANDSCAPE AREAS SHALL HAVE PROPER DRAINAGE THAT PREVENTS EXCESSIVE WATER FROM PONDING ON LAWN AREAS OR AROUND TREES AND SHRUBS.
19. ALL LANDSCAPE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC UNDERGROUND SYSTEM.

GROUNDCOVER KEY

1. PROPOSED SOD AREAS ON 3" TOPSOIL
2. RESTORE EXISTING LAWN AREAS W/ HYDROSEED AND MULCH
3. 3-4" DIA SPADE CUT EDGE W/ 3" SHREDDED BARK MULCH
4. LOW MAINTENANCE LAWN AREAS (LOW GROW SEED BLEND)
5. DETENTION BASIN FLOOR SEED MIX

LOCATION MAP

N.T.S.

NF ENGINEERS

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PROJECT LOCATION
Part of the Southwest ¼
of Section 26
T.2 North, R.11 East
City of Troy, Oakland County, Michigan

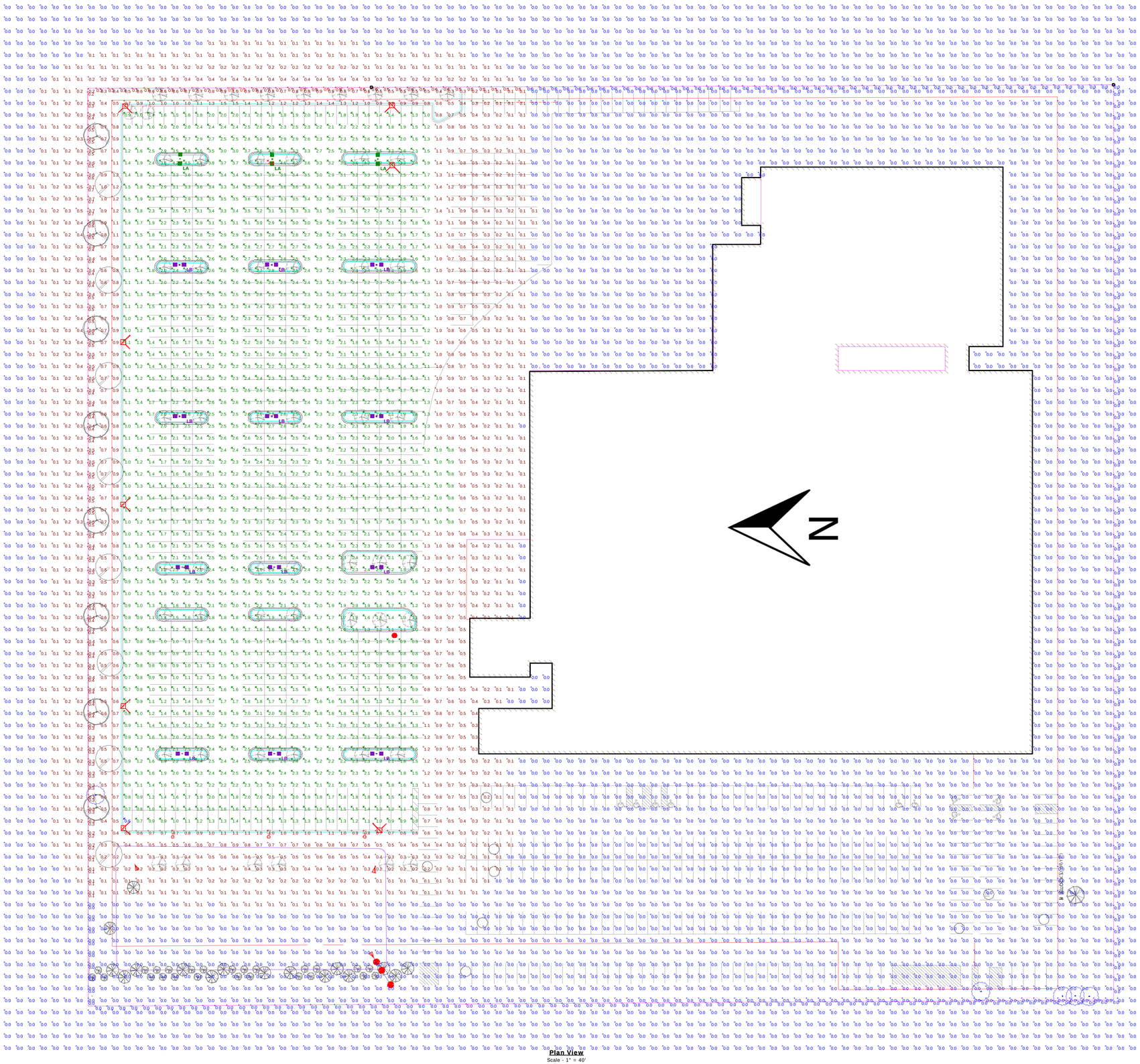
SHEET
Landscape Plan

811 Know what's below Call before you dig.

REVISIONS
09-15-2014 ISSUED FOR SITE PLAN REVIEW
10-17-2014 REVISED PER CITY REVIEW

DRAWN BY:
G. Ostrowski
DESIGNED BY:
G. Ostrowski
APPROVED BY:
G. Ostrowski
DATE:
September 15, 2014
SCALE: 1" = 50'
50 25 0 25 50 75

NFE JOB NO. F731-02
SHEET NO. L-2



Plan View
Scale - 1" = 40'

Luminaire Locations

	Location				
Label	X	Y	MH	Orientation	Tilt
LA	-1386.68	-1262.57	25.00	182.04	0.00
LA	-1309.80	-1262.79	25.00	181.03	0.00
LA	-1221.53	-1262.82	25.00	179.86	0.00
LB	-1387.12	-1351.03	25.00	270.00	0.00
LB	-1310.12	-1351.03	25.00	270.00	0.00
LB	-1222.42	-1351.03	25.00	270.00	0.00
LB	-1387.12	-1477.73	25.00	270.00	0.00
LB	-1310.12	-1477.73	25.00	270.00	0.00
LB	-1222.42	-1477.73	25.00	270.00	0.00
LB	-1384.82	-1603.83	25.00	270.00	0.00
LB	-1307.82	-1603.83	25.00	270.00	0.00
LB	-1222.42	-1603.73	25.00	270.00	0.00
LB	-1384.82	-1759.63	25.00	270.00	0.00
LB	-1307.82	-1759.63	25.00	270.00	0.00
LB	-1222.42	-1759.63	25.00	270.00	0.00

Note

1. SEE MH COLUMN OF LUMINAIRE LOCATIONS FOR MOUNTING HEIGHTS.
2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTORS.
3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT GRADE
4. LIGHT LEVELS ARE NOT TO EXCEED 20 F.C. DURING BUSINESS HOURS AND ARE NOT TO EXCEED 10 F.C. AFTER BUSNINESS HOURS
5. WHERE APPLICABLE, ALL FIXTURES ARE FULLY SHIELDED

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
OVERALL LTG VALUES	+	0.5 fc	4.8 fc	0.0 fc	N/A	N/A	0.1:1
PARKING LOT TLG VALUES	x	2.0 fc	4.8 fc	0.6 fc	8.0:1	3.3:1	0.4:1
PROPERTY LINE LTG VALUES	+	0.1 fc	0.9 fc	0.0 fc	N/A	N/A	0.1:1

Luminaire Schedule

Symbol	Label	Quantity	Manufacturer	Description	Catalog Number	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	LA	3	Lithonia Lighting	DSX0 LED WITH (2) 20 LED LIGHT ENGINE, TYPE T3M OPTIC, 5000K, @ 1000mA	DSX0 LED 40C 1000 50K T3M MVOLT	LED	1	DSX0_LED_40C_1000_50K_T3M_MVOLT.ies	13168.56	0.9	276
	LB	12	Lithonia Lighting	DSX0 LED WITH (2) 20 LED LIGHT ENGINE, TYPE T5W OPTIC, 5000K, @ 1000mA	DSX0 LED 40C 1000 50K T5W MVOLT	LED	1	DSX0_LED_40C_1000_50K_T5W_MVOLT.ies	13578.48	0.9	276

PENSKE: TROY
SITE PLAN: VALUES AT GRADE
PREPARED FOR NOWAK & FRAUS ENGINEERS
GASSER BUSH ASSOCIATES

Designer
AAM
Date
10/16/2014
Scale
AS NOTED
Drawing No.
#14-29955 - V3
REV 10-21-2014

D-Series Size 0
LED Area Luminaire

Catalog Number

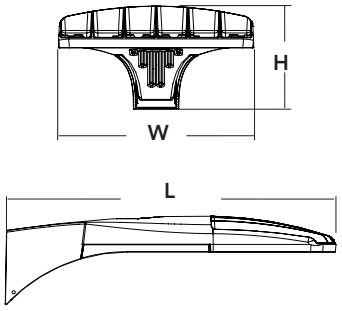
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA:	0.8 ft² (.07 m²)
Length:	26″ (66.0 cm)
Width:	13″ (33.0 cm)
Height:	7″ (17.8 cm)
Weight (max):	16 lbs (7.25 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 65% and expected service life of over 100,000 hours.

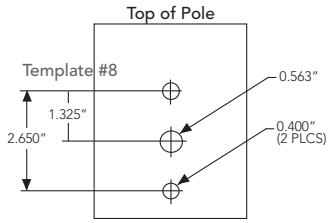
Ordering Information

EXAMPLE: DSX0 LED 40C 1000 40K T3M MVOLT SPA DDBXD

DSX0 LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Mounting	Control options	Other options	Finish *(required)*
DSX0 LED	**Forward optics** 20C 20 LEDs (one engine) 40C 40 LEDs (two engines) **Rotated optics**[1] 30C 30 LEDs (one engine)	530 530 mA 700 700 mA 1000 1000 mA (1 A)[2]	30K 3000 K 80 CRI min.) 40K 4000 K (70 CRI min.) 50K 5000 K (70 CRI) AMBPC Amber phosphor converted[3]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide	MVOLT[4] 120[4] 208[4] 240[4] 277[4] 347[5] 480[5]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[6] RPUMBA Round pole universal mounting adaptor[6] KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[7]	**Shipped installed** PER NEMA twist-lock receptacle only (no controls)[8] DMG 0-10V dimming driver (no controls)[9] DCR Dimmable and controllable via ROAM® (no controls)[10] PIR Motion sensor, 8-15′ mounting height[11] PIRH Motion sensor, 15-30′ mounting height[11] BL30 Bi-level switched dimming, 30%[12] BL50 Bi-level switched dimming, 50%[12]	**Shipped installed** HS House-side shield[13] SF Single fuse (120, 277, 347V)[14] DF Double fuse (208, 240, 480V)[14] L90 Left rotated optics[1] R90 Right rotated optics[1] DDL Diffused drop lens[13]	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

Drilling



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	**DM29AS**	2 at 90° *
DM28AS	2 at 180°	**DM39AS**	3 at 90° *
DM49AS	4 at 90° *	**DM32AS**	3 at 120° **

Example: SSA 20 4C **DM19AS** DDBXD

Visit Lithonia Lighting's POLES CENTRAL to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25″ O.D. minimum.

**For round pole mounting (RPA) only.

Accessories

Ordered and shipped separately.

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V)[15]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V)[15]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (480V)[15]
SC U	Shorting cap[15]
DSX0HS 20C U	House-side shield for 20 LED unit[13]
DSX0HS 30C U	House-side shield for 30 LED unit[13]
DSX0HS 40C U	House-side shield for 40 LED unit[13]
DSX0DDL U	Diffused drop lens (polycarbonate)[13]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish)
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish)[7]

For more control options, visit DTL and ROAM online.

Tenon Mounting Slipfitter**

Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8″	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8″	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4″	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

NOTES

1. 30 LEDs (30C option) and rotated options (L90 or R90) only available together.
2. 1000mA is not available with AMBPC.
3. AMBPC only available with 530mA or 700mA.
4. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120, 208, 240 or 277 options only when ordering with fusing (SF, DF options).
5. Not available with single-board, 530 mA product (20C 530 or 30C 530). Not available with DCR, BL30, or BL50.
6. Available as a separate combination accessory: PUMBA (finish) U.
7. Requires "SPA" mounting option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
8. Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories.
9. DMG option for 347v or 480v requires 1000mA.
10. Specifies a ROAM® enabled luminaire with 0-10V dimming capability; PER option required. Not available with 347 or 480V. Additional hardware and services required for ROAM® deployment; must be purchased separately. Call 1-800-442-6745 or email: sales@roamservices.net. N/A BL30, BL50, PIR, or PIRH.
11. PIR specifies the SensorSwitch SBGR-10-ODP control; PIRH specifies the SensorSwitch SBGR-6-ODP control; see Motion Sensor Guide for details. Dimming driver standard. Not available with DCR.
12. Requires an additional switched circuit. Dimming driver standard. MVOLT only. Not available with DCR.
13. Also available as a separate accessory; see Accessories information. HS and DDL are not available together.
14. Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option.
15. Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item from Acuity Brands Controls.

LITHONIA LIGHTING
One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • Fax: 770.918.1209 • www.lithonia.com

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Actual performance may differ as a result of end-user environment and application. Actual wattage may differ by +/- 8% when operating between 120-480V +/-10%. Contact factory for performance data on any configurations not shown here.

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 85 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35W	T1S	2,904	1	0	1	83	3,655	1	0	1	104	3,941	1	0	1	113
			T2M	2,902	1	0	1	83	3,652	1	0	1	104	3,937	1	0	1	112
			T2S	2,959	1	0	1	85	3,723	1	0	1	106	4,014	1	0	1	115
			T3M	2,952	1	0	1	84	3,715	1	0	1	106	4,005	1	0	1	114
			T3S	2,923	1	0	1	84	3,679	1	0	1	105	3,966	1	0	1	113
			T4M	2,937	1	0	1	84	3,696	1	0	1	106	3,984	1	0	1	114
			T5M	3,037	2	0	1	87	3,823	2	0	1	109	4,121	3	0	1	118
			T5S	3,074	2	0	0	88	3,869	2	0	0	111	4,171	2	0	0	119
			T5VS	3,028	2	0	0	87	3,811	2	0	0	109	4,109	2	0	0	117
			T5W	3,044	2	0	1	87	3,831	3	0	1	109	4,130	3	0	1	118
			TFTM	2,903	1	0	1	83	3,653	1	0	1	104	3,939	1	0	2	113
	700 mA	45 W	T1S	3,599	1	0	1	80	4,524	1	0	1	101	4,902	1	0	1	109
			T2M	3,596	1	0	1	80	4,520	1	0	1	100	4,898	1	0	1	109
			T2S	3,667	1	0	1	81	4,608	1	0	1	102	4,994	1	0	1	111
			T3M	3,658	1	0	1	81	4,598	1	0	1	102	4,983	1	0	2	111
			T3S	3,623	1	0	1	81	4,554	1	0	1	101	4,935	1	0	1	110
			T4M	3,639	1	0	1	81	4,574	1	0	2	102	4,957	1	0	2	110
			T5M	3,764	2	0	1	84	4,731	3	0	1	105	5,127	3	0	1	114
			T5S	3,810	2	0	0	85	4,788	2	0	0	106	5,189	2	0	0	115
			T5VS	3,753	2	0	0	83	4,717	2	0	0	105	5,112	2	0	0	114
			T5W	3,772	3	0	1	84	4,741	3	0	1	105	5,138	3	0	1	114
			TFTM	3,598	1	0	1	80	4,522	1	0	2	100	4,900	1	0	2	109
	1000 mA	72 W	T1S	4,654	1	0	1	65	6,206	2	0	2	86	6,640	2	0	2	92
			T2M	4,650	1	0	1	65	6,200	2	0	2	86	6,634	2	0	2	92
			T2S	4,741	1	0	1	66	6,322	2	0	2	88	6,764	2	0	2	94
			T3M	4,730	1	0	2	66	6,307	2	0	2	88	6,749	2	0	2	94
			T3S	4,685	1	0	1	65	6,246	1	0	2	87	6,684	2	0	2	93
			T4M	4,706	1	0	2	65	6,275	1	0	2	87	6,714	2	0	2	93
			T5M	4,868	3	0	1	68	6,490	3	0	1	90	6,945	3	0	1	96
			T5S	4,926	2	0	0	68	6,568	2	0	0	91	7,028	2	0	0	98
			T5VS	4,853	2	0	0	67	6,471	2	0	0	90	6,924	3	0	0	96
			T5W	4,878	3	0	1	68	6,504	3	0	2	90	6,959	3	0	2	97
			TFTM	4,652	1	0	2	65	6,203	1	0	2	86	6,637	1	0	2	92
40C (40 LEDs)	530 mA	68W	T1S	5,579	1	0	1	82	7,019	2	0	2	103	7,565	2	0	2	111
			T2M	5,574	2	0	2	82	7,012	2	0	2	103	7,558	2	0	2	111
			T2S	5,683	1	0	1	84	7,150	2	0	2	105	7,706	2	0	2	113
			T3M	5,670	1	0	2	83	7,133	2	0	2	105	7,688	2	0	2	113
			T3S	5,615	1	0	2	83	7,065	2	0	2	104	7,614	2	0	2	112
			T4M	5,641	1	0	2	83	7,097	2	0	2	104	7,649	2	0	2	112
			T5M	5,835	3	0	1	86	7,340	3	0	1	108	7,912	3	0	2	116
			T5S	5,905	2	0	0	87	7,429	3	0	0	109	8,007	3	0	1	118
			T5VS	5,817	2	0	0	86	7,318	3	0	0	108	7,888	1	0	2	116
			T5W	5,847	3	0	1	86	7,355	3	0	2	108	7,928	3	0	2	117
			TFTM	5,576	1	0	2	82	7,015	1	0	2	103	7,561	2	0	2	111
	700 mA	91 W	T1S	7,074	2	0	2	78	8,930	2	0	2	98	9,619	2	0	2	106
			T2M	7,068	2	0	2	78	8,922	2	0	2	98	9,610	2	0	2	106
			T2S	7,207	2	0	2	79	9,097	2	0	2	100	9,798	2	0	2	108
			T3M	7,190	2	0	2	79	9,076	2	0	2	100	9,776	2	0	2	107
			T3S	7,121	2	0	2	78	8,988	2	0	2	99	9,682	2	0	2	106
			T4M	7,153	2	0	2	79	9,029	2	0	2	99	9,726	2	0	2	107
			T5M	7,399	3	0	2	81	9,339	3	0	2	103	10,060	3	0	2	111
			T5S	7,488	3	0	0	82	9,452	3	0	1	104	10,181	3	0	1	112
			T5VS	7,377	3	0	0	81	9,311	3	0	1	102	10,030	3	0	1	110
			T5W	7,414	3	0	2	81	9,359	4	0	2	103	10,080	4	0	2	111
			TFTM	7,071	1	0	2	78	8,926	2	0	3	98	9,614	2	0	3	106
	1000 mA	138W	T1S	9,557	2	0	2	69	12,020	2	0	2	87	12,957	3	0	3	94
			T2M	9,548	2	0	2	69	12,009	3	0	3	87	12,946	3	0	3	94
			T2S	9,735	2	0	2	71	12,245	3	0	3	89	13,199	3	0	3	96
			T3M	9,713	2	0	2	70	12,217	2	0	3	89	13,169	3	0	3	95
			T3S	9,619	2	0	2	70	12,099	2	0	2	88	13,042	2	0	2	95
			T4M	9,663	2	0	2	70	12,154	2	0	3	88	13,102	2	0	3	95
			T5M	9,995	3	0	2	72	12,571	4	0	2	91	13,552	4	0	2	98
			T5S	10,115	3	0	1	73	12,723	3	0	1	92	13,715	3	0	1	99
			T5VS	9,965	3	0	1	72	12,534	3	0	1	91	13,511	3	0	1	98
			T5W	10,015	4	0	2	73	12,597	4	0	2	91	13,579	4	0	2	98
			TFTM	9,552	2	0	3	69	12,015	2	0	3	87	12,951	1	0	2	94

Note: Available with phosphor-converted amber LED's (nomenclature AMBPC). These LED's produce light with 97+% >530 nm. Output can be calculated by applying a 0.7 factor to 4000 K lumen values and photometric files.

Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.99

Electrical Load

			Current (A)					
Number of LEDs	Drive Current (mA)	System Watts	120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

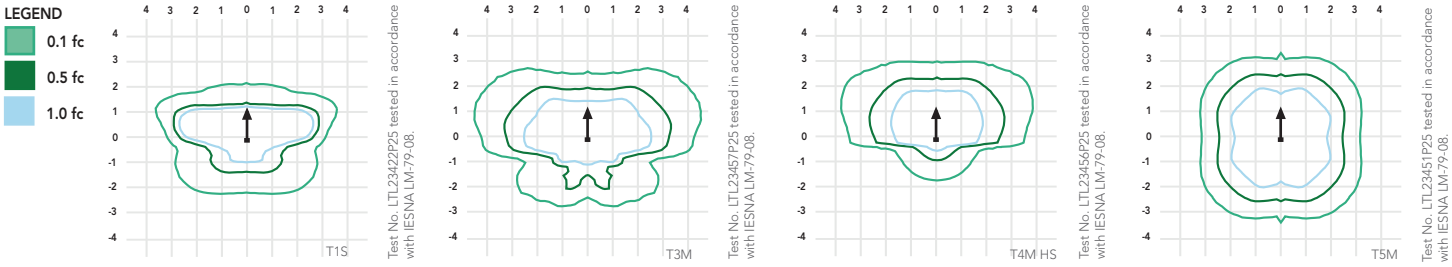
To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	DSX0 LED 20C 1000			
	1	0.97	0.94	0.90
	DSX0 LED 40C 1000			
	1	0.94	0.90	0.84
	DSX0 LED 40C 700			
	1	0.99	0.98	0.96

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft^2) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY
Five-year limited warranty. Full warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Specifications subject to change without notice.

GENERAL SOIL EROSION AND SEDIMENTATION CONTROL NOTES

THE FOLLOWING ITEMS ARE INTENDED TO BE A GUIDE TO THE CONTRACTOR IN EVALUATING SOIL EROSION PREVENTION REQUIREMENTS FOR THE PROJECT. SPECIFIC SOIL EROSION PREVENTION DEVICES AND LOCATIONS ARE DETAILED ON THE PLANS. THE CONTRACTOR SHOULD ALSO NOTE THAT SOIL EROSION AND SEDIMENTATION CONTROLS ARE INCIDENTAL TO THE PROJECT UNLESS SPECIFIED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE PERMIT REQUIREMENTS AND THE STANDARDS AND SPECIFICATIONS OF THE CITY OF TROY.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS.

   WATERWAYS INCLUDE NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGES HAS BEEN ACCOMPLISHED.
5. STAGING THE WORK WILL BE DONE BY THE CONTRACTOR AS INDICATED ON THE SOIL EROSION PLANS AND AS REQUIRED TO ENSURE PROGRESSIVE STABILIZATION OF DISTURBED EARTH.
6. THE CONTRACTOR WILL ESTABLISH SOIL EROSION PREVENTION PRACTICES IN THE EARLY STAGES OF CONSTRUCTION. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
7. ENGINEER AND OWNER CERTIFICATION MUST BE INCLUDED ON THE PLANS.
8. SEPARATE SHEETS SHOWING EROSION PREVENTION AND SEDIMENTATION CONTROL PLANS MUST BE PROVIDED.
9. THE FOLLOWING GUIDELINES ARE TO BE IMPLEMENTED:

   A. CHECK DAMS
   - STONE SIZE MUST BE INCREASED WITH INCREASED SLOPE AND VELOCITY.
   - SIDE SLOPE OF THE DAM SHOULD BE 2:1 OR FLATTER.
   - STRAW BALES ARE NOT TO BE USED FOR CHECK DAMS.
   - ADD STONES AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.
   - ANY ACCUMULATION OF SEDIMENT SHALL BE REMOVED AND STOCKPILED IN A STABILIZED AREA TO PREVENT THE MATERIAL FROM ERODING BACK INTO THE DRAINAGE COURSE.

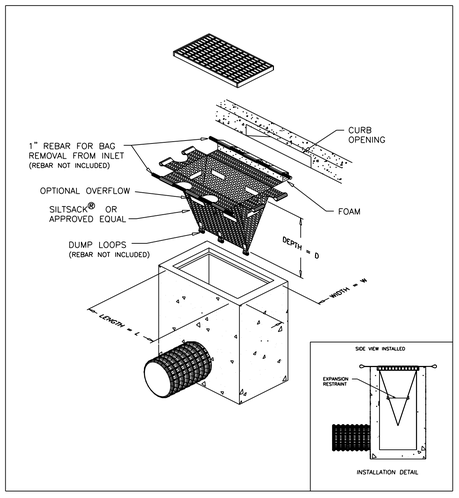
   B. VEGETATIVE BUFFER ZONES
   - VEGETATION MUST BE MAINTAINED IN A VIGOROUS CONDITION.
   - RESHAPE AND RESEED AREAS WHERE CONCENTRATED FLOW OCCURS OR VEGETATION FAILS.
   - TO BE USED FOR SHEET FLOWS ONLY.
   - NOT TO BE USED AS A ROADWAY.

   C. SILT FENCE
   - MUST BE INSTALLED ALONG THE CONTOUR LINE.
   - IS NOT TO BE USED IN AREAS OF CONCENTRATED FLOW.
   - MUST BE TRENCHED AT LEAST 6 INCHES AND BACKFILLED.
   - MULTIPLE ROWS ARE TO BE USED UP A SLOPE.
   - ACCUMULATED SEDIMENT MUST BE PERIODICALLY REMOVED.
   - WHERE NECESSARY, A SUPPORT FENCE SHALL BE USED TO SUPPORT THE GEOTEXTILE FILTER FABRIC.
   - TO BE REMOVED AFTER SITE IS PERMANENTLY STABILIZED.

   D. INLET SEDIMENT TRAP
   - THE SEDIMENT DEPOSITION AREA AND NONWOVEN GEOTEXTILE FILTER FABRIC SHOULD BE CLEANED OF ALL ACCUMULATED SEDIMENT AFTER EACH STORM.
   - AFTER ALL CONTRIBUTING AREAS ARE STABILIZED, THE FILTER FABRIC WILL BE REMOVED, SEDIMENT DEPOSITION AREA FILLED, AND A SOD INLET FILTER PLACED OVER THE DISRUPTED LAWN AREA.
   - THE FILTER MATERIAL USED TO BACKFILL PARKING LOT DRAINAGE HOLES WILL BE PEASTONE. THE SIDE EXCAVATION FOR THE PLACEMENT OF THIS MATERIAL WILL NOT BE DEEPER THAN THE INVERT OF THE DRAINAGE HOLES

   E. INLET FILTERS AFTER PAVING OR GRADING
   - INLET FILTERS WILL REMAIN IN PLACE UNTIL ALL DENUDED AREAS CONTRIBUTING TO THEM ARE STABILIZED WITH VEGETATION.
   - PERIODIC INSPECTION AND MAINTENANCE WILL BE PROVIDED TO INSURE THAT FILTERS ARE FUNCTIONING PROPERLY

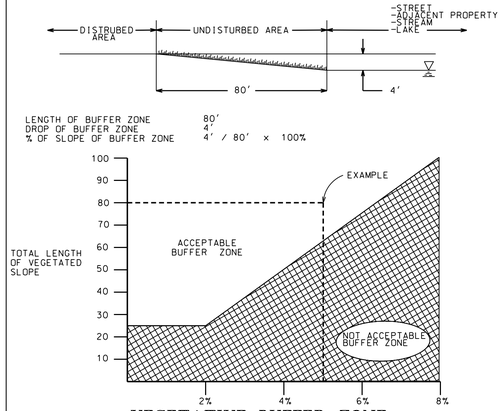
   F. SOD INLET FILTER
   - SOD INLET FILTERS WILL ONLY BE USED TO HANDLE LIGHT CONCENTRATIONS OF SEDIMENT.
   - RECOMMENDED FOR USE AFTER FINAL GRADING IS COMPLETE AND DURING THE ESTABLISHMENT OF A VEGETATIVE COVER.
   - CATCH BASIN INLET COVERS MAY BE WRAPPED IN A NON-WOVEN GEOTEXTILE FILTER FABRIC FOR ADDITIONAL FILTRATION.
   - PERIODIC INSPECTION AND MAINTENANCE MUST BE PROVIDED TO INSURE EFFICIENT OPERATION.



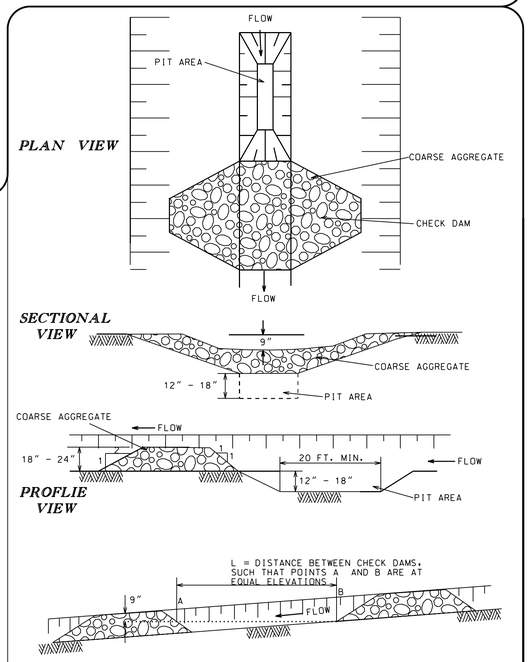
INLET FILTERS AFTER PAVING OR GRADING

THE GRAPH LISTED BELOW IS USED TO DETERMINE THE ADEQUACY OF AN EXISTING VEGETATIVE BUFFER ZONE FOR USE AS A SEDIMENT FILTER. THIS GRAPH IS ONLY APPLICABLE IF THE VEGETATION IS A DENSE WELL-GROWN STAND OF GROUND COVER. AT LEAST 4" IN HEIGHT. AN AREA COVERED WITH BUSHES AND TREES WITHOUT A GOOD GROUND COVER IS NOT ACCEPTABLE.

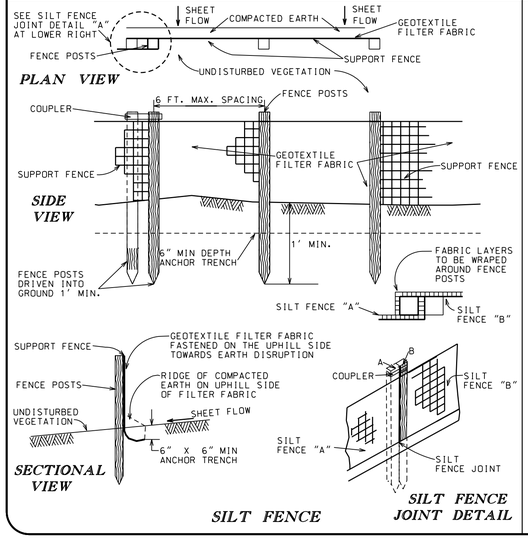
EXAMPLE



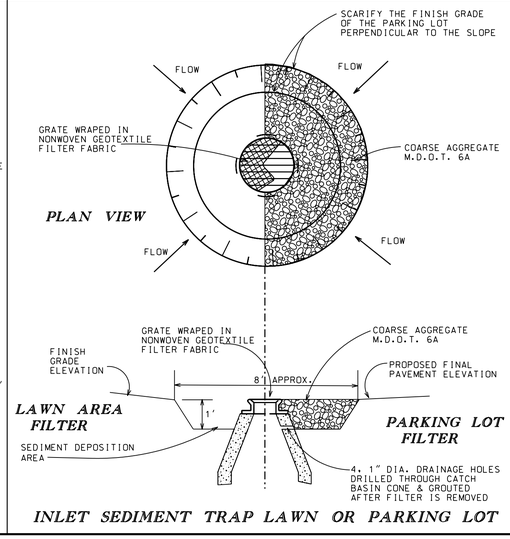
VEGETATIVE BUFFER ZONE



SEDIMENT TRAP WITH CHECK DAM



SILT FENCE

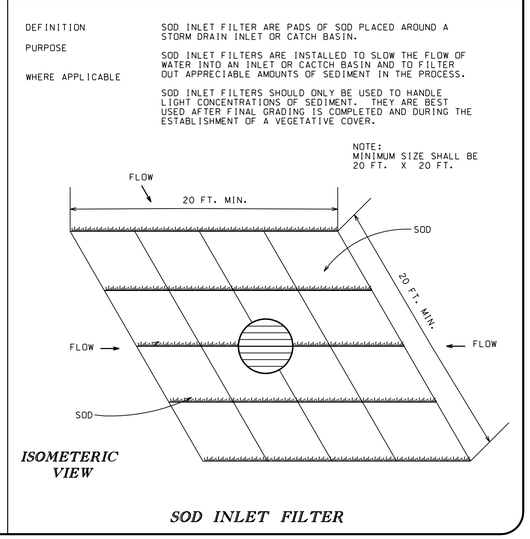


INLET SEDIMENT TRAP LAWN OR PARKING LOT

DEFINITION — SOD INLET FILTER ARE PADS OF SOD PLACED AROUND A STORM DRAIN INLET OR CATCH BASIN.

PURPOSE — SOD INLET FILTERS ARE INSTALLED TO SLOW THE FLOW OF WATER INTO AN INLET OR CATCH BASIN AND TO FILTER OUT APPRECIABLE AMOUNTS OF SEDIMENT IN THE PROCESS.

WHERE APPLICABLE — SOD INLET FILTERS SHOULD ONLY BE USED TO HANDLE LIGHT CONCENTRATIONS OF SEDIMENT. THEY ARE BEST USED AFTER FINAL GRADING IS COMPLETED AND DURING THE ESTABLISHMENT OF A VEGETATIVE COVER.



SOD INLET FILTER

GENERAL CONSTRUCTION NOTES

THE FOLLOWING ITEMS OF WORK RELATED TO THE PROPOSED CONSTRUCTION ARE INTENDED TO ACT AS A GUIDE TO THE CONTRACTOR IN EVALUATING THE REQUIREMENTS FOR THE PROJECT. HOWEVER, THE CONTRACTOR IS RESPONSIBLE TO INSPECT THE PROJECT IN THE FIELD AND MAKE A DETERMINATION OF THE ITEMS OF WORK NECESSARY TO COMPLETE THE PROJECT. THE CONTRACTOR SHALL SPECIFICALLY DIRECT HIS ATTENTION TO THE EXTENT OF INCIDENTAL CONTRACT ITEMS OR WORK IDENTIFIED AS BEING INCLUDED IN OTHER ESTABLISHED PAY ITEMS AND INCLUDE THIS WORK IN HIS BID PRICE.

1. THE CONTRACTOR SHALL NOTIFY THE CITY OF TROY AT (248) 524-3409 THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION.
2. ALL WATER MAIN AND SANITARY SEWER CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND CITY OF TROY SPECIFICATIONS AND THE DETROIT WATER AND SEWERAGE DEPARTMENTS.
3. ROAD COMMISSION FOR OAKLAND COUNTY (RCOC) PERMITS:

   ALL ROAD CROSSINGS AND RELATED WORK IN THE COUNTY RIGHT-OF-WAYS SHALL BE PERFORMED UNDER THE SUPERVISION AND INSPECTION OF THE RCOC. ALL PERMITS SHALL BE OBTAINED BY THE CONTRACTOR, AND ALL PERMIT AND INSPECTION FEES SHALL BE PAID FOR BY THE CONTRACTOR (INCLUDED IN THE COST OF THE IMPROVEMENT). ROAD PATCHES SHALL BE AS SPECIFIED BY THE RCOC, AND ALL REMOVALS SHALL BE SAWCUT FULL DEPTH. TRAFFIC FOR ALL LOCAL RESIDENTS AND EMERGENCY VEHICLES MUST BE MAINTAINED AT ALL TIMES.
4. OAKLAND COUNTY DEPT. OF PUBLIC WORKS (OCDPW) PERMITS:

   ALL DRAIN CROSSINGS AND RELATED WORK IN THE COUNTRY DRAIN RIGHT-OF-WAY AND/OR ITS EASEMENTS SHALL BE PERFORMED UNDER THE SUPERVISION AND INSPECTION OF THE OCDPW. ALL PERMITS SHALL BE OBTAINED BY THE CONTRACTOR, AND ALL PERMIT AND INSPECTION FEES SHALL BE PAID FOR BY THE CONTRACTOR (INCLUDED IN THE COST OF THE IMPROVEMENT).

   THE CONTRACTOR SHALL CONTACT THE OFFICE OF THE OCDPW 48 HOURS PRIOR TO CONSTRUCTION.
5. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (1-800-482-7171) FOR THE LOCATION OF ALL UNDERGROUND GAS, CABLE AND OTHER UTILITIES, AND SHALL ALSO NOTIFY REPRESENTATIVES OF ALL OVERHEAD AND UNDERGROUND UTILITIES LOCATED IN THE VICINITY OF THE WORK.

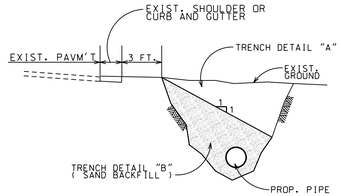
   THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE EXISTING DEPTHS AND HORIZONTAL LOCATIONS OF ALL EXISTING UTILITIES BY PRE-EXCAVATING ALL CONFLICTS BEFORE ANY WORK IS STARTED. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE DETERMINED BY HAND-DIGGING. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH MATERIAL ACCEPTABLE TO THE UTILITY OWNER. ALL COST FOR LOCATING, PRE-EXCAVATING, REMOVING, AND REPLACING OR RELOCATING THESE UTILITIES SHALL BE INCLUDED IN THE COST OF THE IMPROVEMENT.

   NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR ANY DELAY OR INCONVENIENCE DUE TO MATERIAL SHORTAGES OR REASONABLE DELAYS DUE TO THE OPERATIONS OF OTHER CONTRACTORS, UTILITY COMPANIES, OR ANY PUBLIC AUTHORITY DOING THE WORK INDICATED OR SHOWN ON THE PLANS OR IN THE PROPOSAL, OR FOR ANY REASONABLE DELAY OF CONSTRUCTION DUE TO THE ENCOUNTERING OF EXISTING UTILITIES THAT MAY OR MAY NOT BE SHOWN ON THE PLANS.
6. THE CONTRACTOR SHALL HAVE AVAILABLE AT ALL TIMES A COMPETENT SUPERINTENDENT OR FOREMAN AUTHORIZED TO ACT FOR THE CONTRACTOR, AS HIS AGENT ON THE WORK, WHO THOROUGHLY UNDERSTANDS THE PLANS AND SPECIFICATIONS AND WHO SHALL RECEIVE INSTRUCTIONS FROM THE ENGINEER. THE SUPERINTENDENT OR FOREMAN SHALL BE DESIGNATED BY NAME PRIOR TO COMMENCEMENT OF THE WORK AND SHALL BE AVAILABLE AS REQUIRED FOR PROPERTY MANAGEMENT OF THE PROJECT FOR THE DURATION OF THE CONTRACT. PLANS AND SPECIFICATIONS SHALL BE AVAILABLE ON THE PROJECT AT ALL TIMES.
7. WHEN THE ENGINEER REQUIRES THE CITY OF TROY TO PERFORM EMERGENCY WORK, WITH OR WITHOUT NOTIFICATIONS TO THE CONTRACTOR OR SURETY, THE CONTRACTOR WILL BE CHARGED EQUIPMENT RENTAL RATES AS LISTED IN THE CURRENT EDITION OF "RENTAL RATES FOR CONSTRUCTION EQUIPMENT" PREPARED BY ASSOCIATED EQUIPMENT DISTRIBUTOR, AND LABOR AT THE CURRENT HOURLY RATE PER MAN. HOUR. THE TIME CHARGED TO THE CONTRACTOR SHALL BE FROM THE TIME THE MAN AND EQUIPMENT LEAVE THE CITY OF TROY YARD TO THE TIME THAT IT RETURNS TO THE CITY OF TROY YARD.

   THE CONTRACTOR SHALL PAY FOR ALL INSPECTION OVER EIGHT (8) HOURS PER DAY AND ALL INSPECTION ON SATURDAY AT THE CURRENT HOURLY RATE PER MAN HOUR. THE CONTRACTOR WILL NOT BE CHARGED FOR OVERTIME ON SATURDAY IF HE HAS FIVE (5) MEN OR LESS PERFORMING CLEAN-UP WORK AND LANDSCAPE ITEMS. IN ADDITION, IF HOLIDAY OR SUNDAY WORK IS PERMITTED BY THE CITY, THE CONTRACTOR SHALL PAY FOR ALL INSPECTION AT THE CURRENT HOLIDAY RATE PER HOUR PER MAN.
8. THE CONTRACTOR SHALL BE REPSONSIBLE FOR COMPLETE RESTORATION OF THIS PROJECT TO CONDITIONS THAT ARE ACCEPTABLE TO THE JURISDICTIONAL AUTHORITY, ENGINEER AND/OR OWNER.

   DRIVEWAYS SHALL BE RESTORED IN KIND WITH THE FOLLOWING MINIMUM MATERIAL THICKNESS: SIX (6) INCHES CONCRETE, FOUR (4) INCHES ASPHALT ON SIX (6) INCHES AGGREGATE OR EIGHT (8) INCHES OF AGGREGATE. (ALL DRIVEWAY CUT REMOVALS SHALL BE SAWCUT).

   ALL DISTURBED LAWN AREAS SHALL BE SODDED WITH CLASS "A" SOD ON FOUR (4) INCHES OF TOPSOIL. ALL OTHER NON-RESIDENTIAL FIELD AREAS SHALL BE SEEDED, FERTILIZED AND MULCHED ON THREE (3) INCHES OF TOPSOIL (SEE SPECIFICATIONS).
9. THE TRENCH BACKFILL FOR WATER MAINS SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THE ATTACHED "STANDARD WATER DETAIL" SHEET. (ALL TRENCH BACKFILL FOR PROPOSED WATER MAINS SHALL BE INCLUDED IN THE COST OF THE WATER MAIN).
10. THE TRENCH BACKFILL FOR SANITARY SEWERS AND STORM SEWERS SHALL BE AS SHOWN BELOW.



SECTIONAL VIEW

TRENCH DETAIL "A" - SHALL BE BACKFILLED IN 12 INCH LAYERS AND COMPACTED TO 90% OF ITS MAXIMUM UNIT WEIGHT.

TRENCH DETAIL "B" - SHALL BE SAND BACKFILLED IN 12 INCH LAYERS AND COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT.

11. ALL TREES, SHRUBS, LANDSCAPING, MAILBOXES, FENCES, DRIVEWAYS, SIDEWALKS, CULVERTS, STORM SEWERS, DITCHES, GUARD RAILS, SPRINKLER SYSTEMS, SIGNS, YARD OR SIGN LIGHTINGS, UTILITIES AND OTHER EXISTING ITEMS ALONG THE PATH OF THE PROPOSED WATER MAIN AND/OR SANITARY SEWER SHALL BE PROTECTED AND/OR RESTORED AS DESCRIBED IN THE SPECIFICATION BOOK (INCLUDED IN THE COST OF THE IMPROVEMENT).

    ALL EXISTING MAILBOXES ON THE PROJECT WILL BE TEMPORARILY RESET ALONG THE OWNER'S DRIVEWAY, OR ALONG AN INTERSECTING STREET, BEYOND THE LIMITS OF CONSTRUCTION, AS DIRECTED BY THE ENGINEER. WHEN THE PROJECT IS COMPLETED THE MAILBOXES SHALL BE RESET BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL POSTAL REGULATIONS. THE TEMPORARY RESETTING AND FINAL PLACEMENT OF MAILBOXES SHALL BE INCLUDED IN THE PROJECT AND WILL NOT BE PAID FOR SEPARATELY.
12. THE CONTRACTOR SHALL NOT EXPAND UPON THE WORK OR DEVIATE FROM THE LOCATIONS, ELEVATIONS OR SPECIFICATIONS OF ANY WORK AS SHOWN ON THESE PLANS WITHOUT RECEIVING PRIOR APPROVAL FROM THE CITY OF TROY ENGINEERING DEPARTMENT AND/OR OTHER JURISDICTIONAL AUTHORITIES

    IN ADDITION TO THE NOTES ON THIS SHEET, THE CONTRACTOR'S ATTENTION SHALL BE DIRECTED TO THE NOTES ON THE ATTACHED "STANDARD DETAIL" SHEETS AS WELL AS ADDITIONAL CONSTRUCTION REQUIREMENTS.

CITY OF TROY

OAKLAND COUNTY, MICHIGAN

STANDARD SOIL EROSION & GENERAL CONSTRUCTION (1 OF 1)

ENGINEERING DEPARTMENT

APPROVED BY : _____ DATE : _____
STEVEN J. VANDETTE, CITY ENGINEER

REVISIONS	DATE	REMARKS

PROJECT NO.	SHEET NO.
DATE: JUNE 2007	
DRAWN BY: G.S.F./M.P.B.	CHECKED BY: J.E.L.

STATE OF MICHIGAN — STEVEN J. VANDETTE — ENGINEER NO. 28197 — LICENSED PROFESSIONAL ENGINEER

STEVEN J. VANDETTE, P.E. 28197

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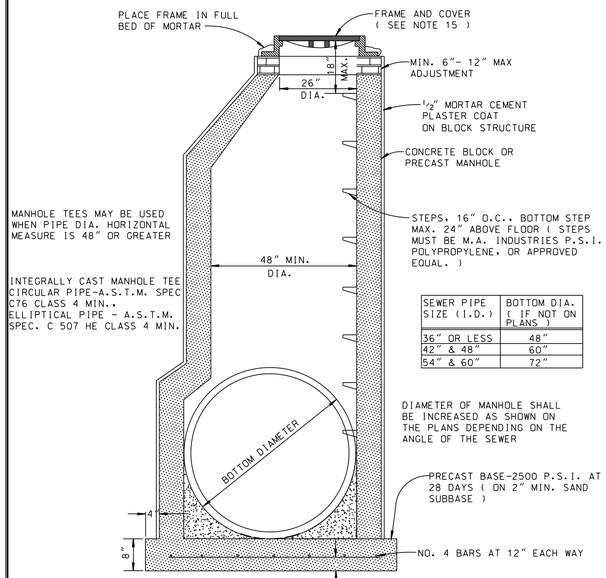
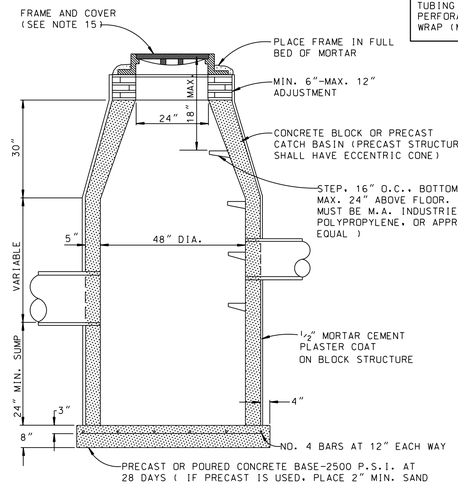


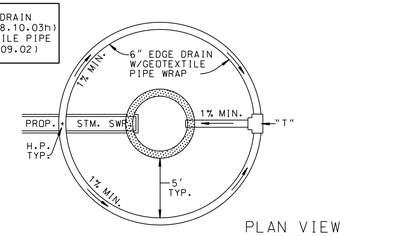
SEWER PIPE SIZE (I.D.)	BOTTOM DIA. (IF NOT ON PLANS)
36" OR LESS	48"
42" & 48"	60"
54" & 60"	72"

STORM SEWER MANHOLE A

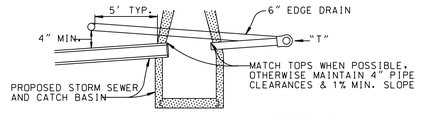


4 FT. DIAMETER CATCH BASIN

CORRUGATED P.V.C. UNDERDRAIN TUBING (M.D.O.T. SPEC. 8.10.03h) PERFORATED WITH GEOTEXTILE PIPE WRAP (M.D.O.T. SPEC. 8.09.02)



PLAN VIEW



SECTION

CATCH BASIN EDGE DRAIN DETAIL

GENERAL NOTES

1. PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST HAVE IN HIS POSSESSION A COPY OF A VALID PERMIT TO CONSTRUCT A CONNECTION TO, OR AN EXTENSION OF, THE STORM WATER DRAINAGE SYSTEM.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING, AT A TIME AND PLACE AS ARRANGED BY THE ENGINEER DEPT., AT WHICH VARIOUS UTILITY COMPANIES AND GOVERNMENTAL AGENCY REPRESENTATIVES WILL BE PRESENT. THE OWNERS' ENGINEER SHALL SUBMIT APPROVED PLANS TO ALL UTILITY COMPANIES AND GOVERNMENTAL AGENCIES 10 DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. CONSTRUCTION SHALL START WITHIN 3 WEEKS OF MEETING.
3. AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL GIVE NOTIFICATION OF HIS INTENTION TO BEGIN CONSTRUCTION TO THE CITY OF TROY FIELD ENGINEERING DEPARTMENT, 524-3409, TO THE CITY OF DEPARTMENT OF PUBLIC WORKS 524-3392, THE COUNTY PUBLIC WORKS COMMISSIONERS OFFICE (858-0958) AND THE COUNTY ROAD COMMISSION (858-4835) IF APPLICABLE.
4. THE CONTRACTOR SHALL SECURE PERMITS FROM THE COUNTY PUBLIC WORKS COMMISSION FOR ALL TAPS AND CROSSINGS OF COUNTY DRAINS AND SHALL PAY THE COST OF SAID PERMITS AND THE COST OF ANY INSPECTION CHARGES BY THAT AGENCY FOR WORK DONE UNDER THE PERMITS.
5. 72 HOURS PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (1-800-482-7171) FOR THE LOCATION OF UNDERGROUND FACILITIES, AND SHALL ALSO NOTIFY REPRESENTATIVES OF ANY OTHER FACILITIES, LOCATED IN THE VICINITY OF THE WORK, WHICH MAY NOT BE HANDLED BY MISS DIG.
6. ALL STORM WATER DRAINAGE SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF TROY, COUNTY ROAD COMMISSION, AND/OR COUNTY DRAIN COMMISSION AS APPLICABLE.
7. STORM SEWER PIPE SHALL BE REINFORCED CONCRETE, ASTM C-76 CLASS III OR HIGHER UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. THE FOLLOWING STORM SEWER PIPE MATERIALS MAY BE USED ONLY WITH APPROVAL OF THE CITY ENGINEER. IFSOILS PH & RESISTIVITY TESTS DEMONSTRATE A PH OF 5.0 TO 9.0 AND AN ELECTRICAL RESISTANCE OF 2000 OHM/CM/CU OR HIGHER, THEN HELICALLY CORRUGATED, FULL WELDED SEAM, AASHTO M-218 STEEL PIPE, GAUGE AS SHOWN, MANUFACTURED ACCORDING TO AASHTO M-36 WITH 2 2/3" X½" OR 125MM X 25MM CORRUGATIONS, ALUMINIZED AT 1.00 OZ PER SQ. FT. PER AASHTO M-274 MAY BE USED. THE C.S.P. DIAMETER MUST HAVE THE SAME HYDRAULIC CAPACITY AS THE CONCRETE PIPE. WHEN THE PIPE IS NOT SUBJECT TO CRUSHING FROM CONSTRUCTION OPERATIONS AND PROPERTY MAINTENANCE AND A MIN. 3' OF COVER CAN BE MAINTAINED ABS COMPOSITE (TRUSS) PIPE AND PVC PIPE MAY BE USED OUTSIDE PUBLIC ROAD R.O.W. WITH APPROVAL OF THE CITY ENGINEER.
8. REINFORCED CONCRETE PIPE JOINTS SHALL BE MODIFIED TONGUE & GROOVE WITH RUBBER "O" RING GASKET. CORRUGATED STEEL PIPE SHALL HAVE TWO CIRCUMSTANTIAL CORRUGATIONS ROLLED ON EACH END OF EACH SECTION. STEEL COUPLING BANDS OF THE SAME MATERIAL AS THE PIPE. FITTING THE PIPE CONFIGURATION WITH TWO "O" RING RUBBER GASKETS SHALL PRODUCE A WATERTIGHT JOINT ("HUGGER BANDS"). "PVC & TRUSS" PIPE JOINTS SHALL BE CHEMICALLY FUSED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
9. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL STORM SEWER BEDDING SHALL BE STANDARD BEDDING. CRUSHED STONE BEDDING SHALL BE PLACED. IF THE INSPECTOR DEEMS THAT THE INSTALLATION WARRANTS IT.
11. ALL SUMP AND BUILDING SERVICE CONNECTIONS SHALL BE 3" POLY-VINYL CHLORIDE (PVC) SEWER PIPE, SCHEDULE 40 WITH CHEMICALLY FUSED JOINTS AND CONNECT TO A CATCH BASIN OR MANHOLE. NO BLIND TAPS.
12. ALL DRAINAGE STRUCTURES SHALL CONFORM TO THE DETAILS SHOWN. ALL CATCH BASINS SHALL HAVE 2 FT. SUMP.
13. CONNECTIONS TO DRAINAGE STRUCTURES SHALL BE CORED. THE OPENING BETWEEN THE HOLE AND PIPE SHALL BE SEALED WITH A NON-SHRINK GROUT.
14. IF THE WALL OF THE STRUCTURE BEING TAPPED IS DAMAGED, THE CITY SHALL DECIDE IF IT CAN BE REPAIRED AND APPROVE THE METHOD. IF THE STRUCTURE CANNOT BE REPAIRED IT WILL BE REPLACED.
15. UNLESS OTHERWISE NOTED ON THE PLANS, STRUCTURE FRAME AND COVERS SHALL BE AS FOLLOWS:

    MANHOLE
    E.J.I.W. 1000 WITH TYPE "B" PERFORATED COVER, OR EQUAL.

    CATCH BASIN IN PAVEMENT E.J.I.W. 5080 WITH SINUSOIDAL M2 GRATE, OR EQUAL, IN RESIDENTIAL AREAS.

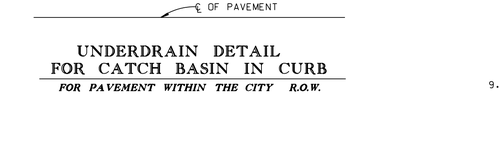
    CATCH BASIN IN PAVEMENT E.J.I.W. 5105 WITH SINUSOIDAL M2 GRATE, OR EQUAL, IN NON-RESIDENTIAL AREAS.

    CATCH BASIN NOT IN PAVEMENT E.J.I.W. 1000-01 WITH TYPE M, C, OR 01 HEAVY DUTY GRATE, OR EQUAL.

    CATCH BASIN IN LANDSCAPE AREAS OR ROADSIDE DITCH MAY REQUIRE THE USE OF E.J.I.W. OR ONE OF THE FOLLOWING:

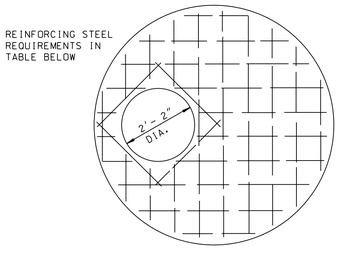
    - 1040 TYPE "N" OVAL GRATE OR TYPE 02 BEEHIVE GRATE
    - 1130 TYPE "N" OVAL GRATE OR TYPE 01 BEEHIVE GRATE
    - 2800 TYPE "N" OVAL GRATE OR TYPE 02 BEEHIVE GRATE
    - 6508 OR 6517

16. THE CONTRACTOR SHALL PROVIDE A 3 YEAR MAINTENANCE AND GUARANTEE BOND TO THE CITY, DATED FROM THE TIME OF FINAL ACCEPTANCE BY THE CITY. THE BOND AMOUNT SHALL BE 35% OF CONSTRUCTION COSTS.
17. BEFORE FINAL ACCEPTANCE, A FINAL INSPECTION MUST BE MADE BY ALL NECESSARY CITY DEPARTMENTS, AND AS-BUILT SEPIA MYLARS SUBMITTED TO THE ENGINEERING DEPARTMENT.
18. ALL STORM SEWER PIPE 30" AND LARGER SHALL HAVE POINTED JOINTS.
19. ONLY NEW UNDAMAGED STORM SEWER PIPE SHALL BE USED. THE CITY INSPECTOR SHALL HAVE THE RIGHT TO REJECT ANY OR ALL PIPE.

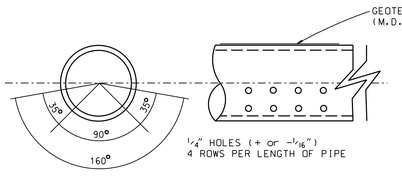


UNDERDRAIN DETAIL FOR CATCH BASIN IN CURB

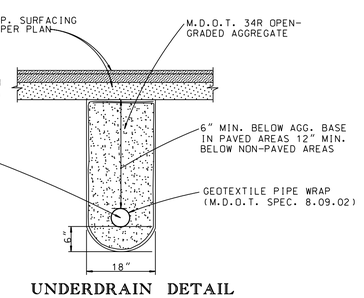
FOR PAVEMENT WITHIN THE CITY R.O.W.



TOP SLAB X-SECTION



REAR YARD UNDERDRAIN CROSS SECTION

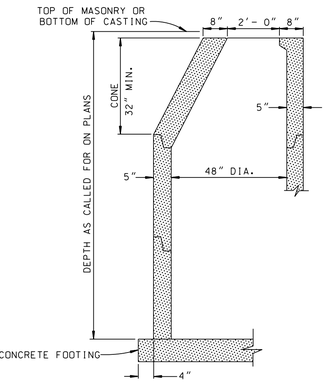


GENERAL PIPE BEDDING & TRENCH NOTES

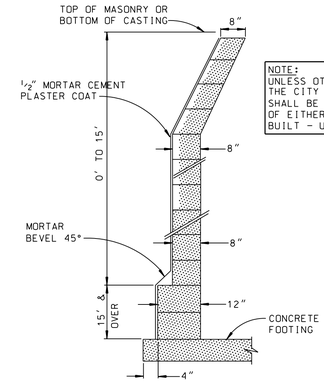
1. THE CONTRACTOR SHALL INSTALL THE PIPE IN ACCORDANCE WITH THE BEDDING DETAIL REQUIRED FOR THE PIPE DEPTH (MEASURED FROM THE TOP OF THE PIPE), AND TRENCH WIDTH (MEASURED ACROSS THE TRENCH AT THE TOP OF THE PIPE) CONSTRUCTED. A CONTRACTOR MAY ALWAYS USE A HIGHER QUALITY BEDDING CLASS THAN REQUIRED. ANY OTHER VARIATIONS MUST BE APPROVED IN WRITING BY THE ENGINEER.
2. CRUSHED STONE BEDDING SHALL BE UTILIZED FOR ALL DEWATERED GROUND TRENCHES AND SHALL UTILIZE A TRENCH WIDTH OF 30" (MINIMUM).
3. BEDDING & BACKFILL MATERIAL SHALL BE AS FOLLOWS:

CRUSHED STONE BEDDING: SHALL CONSIST OF WELL GRADED CRUSHED STONE. THE STONE SHALL CONFORM TO ASTM D 448. #67. ASTM D 2487 CLASS I. OR ALTERNATIVE APPROVED BY THE ENGINEER. ANY MATERIAL INCORPORATED SHALL PROVIDE A MINIMUM OF 90% CRUSHED MATERIAL. MDOT COURSE AGGREGATES 6A, 6AA, 9A, 17A & 25 SERIES ARE ALSO APPROVED FOR USE IF THEY ARE MANUFACTURED WITH SUFFICIENT CRUSHED MATERIAL AND NO STONE IS LARGER THAN 1-1/4 INCH IN DIAMETER. SPADING THE HAUNCH AREA IS REQUIRED, FOR DENSITY.

STANDARD BEDDING: SHALL CONSIST OF WELL GRADED COURSE SANDS AND GRAVEL (1-1/4 INCH MAXIMUM DIAMETER) CONTAINING A SMALL PERCENTAGE OF FINES. THE MATERIAL SHALL CONFORM TO ASTM D 2487 CLASS II AND SHALL INCLUDE PEA PEBBLE AND MDOT AGGREGATES 20 SERIES, 21 SERIES, 22 SERIES, 23A, 26A, 28 SERIES & 31 SERIES. 90% MINIMUM DENSITY REQUIRED.



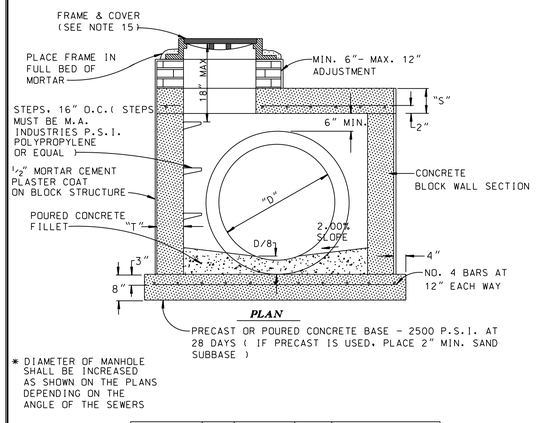
TYPICAL PRECAST CONCRETE SECTION



TYPICAL CONCRETE BLOCK SECTION

NOTE:
UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER, EACH STRUCTURE SHALL BE CONSTRUCTED TOTALLY OF EITHER PRECAST SEGMENTS OR BUILT - UP MORTAR AND BLOCK.

TYPICAL WALL SECTION FOR 4'-0" DIAMETER DRAINAGE STRUCTURE

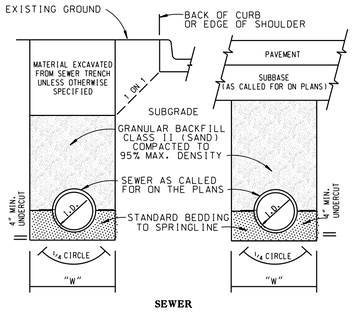


PLAN

* DIAMETER OF MANHOLE SHALL BE INCREASED AS SHOWN ON THE PLANS DEPENDING ON THE ANGLE OF THE SEWERS

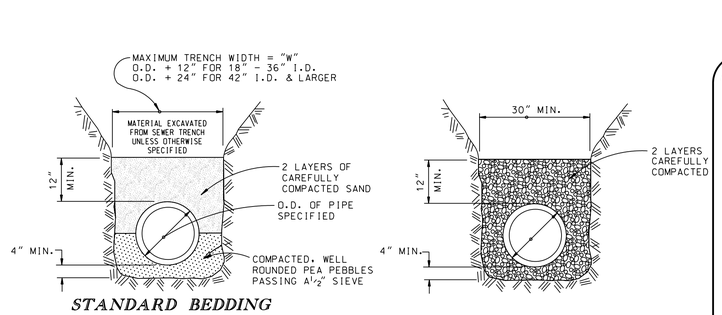
OUTLET "D"	M.H. I.D.*	TOP SLAB "S"	WALL "T"	REINFORCING STEEL
36" OR LESS	4	9"	12"	3/4" @ 9" EA. WAY
42"	5	10"	12"	3/4" @ 9" EA. WAY
48"- 54"	6	11"	12"	7/8" @ 9" EA. WAY
	7	12"	12"	1" @ 9" EA. WAY
	8	12"	12"	1" @ 9" EA. WAY

STORM SEWER MANHOLE A WITH FLAT SLAB



SEWER
- UNDER ROAD BED
OR WITHIN THE INFLUENCE OF ROADBED

TRENCH DETAIL 'B'



STANDARD BEDDING TRENCH DETAIL 'A'

NOTE: APPROVAL MAY BE GIVEN TO ALTERNATE MATERIALS AND METHODS TO ACHIEVE STANDARD BEDDING.

CRUSHED STONE BEDDING

NOTE: FOR ALL TRENCHES GREATER THAN 30" IN WIDTH, DEWATERED TRENCHES AND ALL TRENCHES GREATER THAN 20' IN DEPTH.

CITY OF TROY

OAKLAND COUNTY, MICHIGAN

STANDARD STORM SEWER DETAILS

ENGINEERING DEPARTMENT

APPROVED BY : STEVEN J. VANDETTE, CITY ENGINEER DATE : JANUARY 8, 2001

REVISIONS	DATE	REMARKS

PROJECT NO. | SHEET NO.
DATE: JANUARY 2001
DRAWN BY: G.S.F. | CHECKED BY: W.D.J.

STATE OF MICHIGAN — STEVEN J. VANDETTE — ENGINEER NO. 28197 — LICENSED PROFESSIONAL ENGINEER

STEVEN J. VANDETTE, P.E. 28197

Storm detail.dgn 7/12/2007 12:42:29 PM