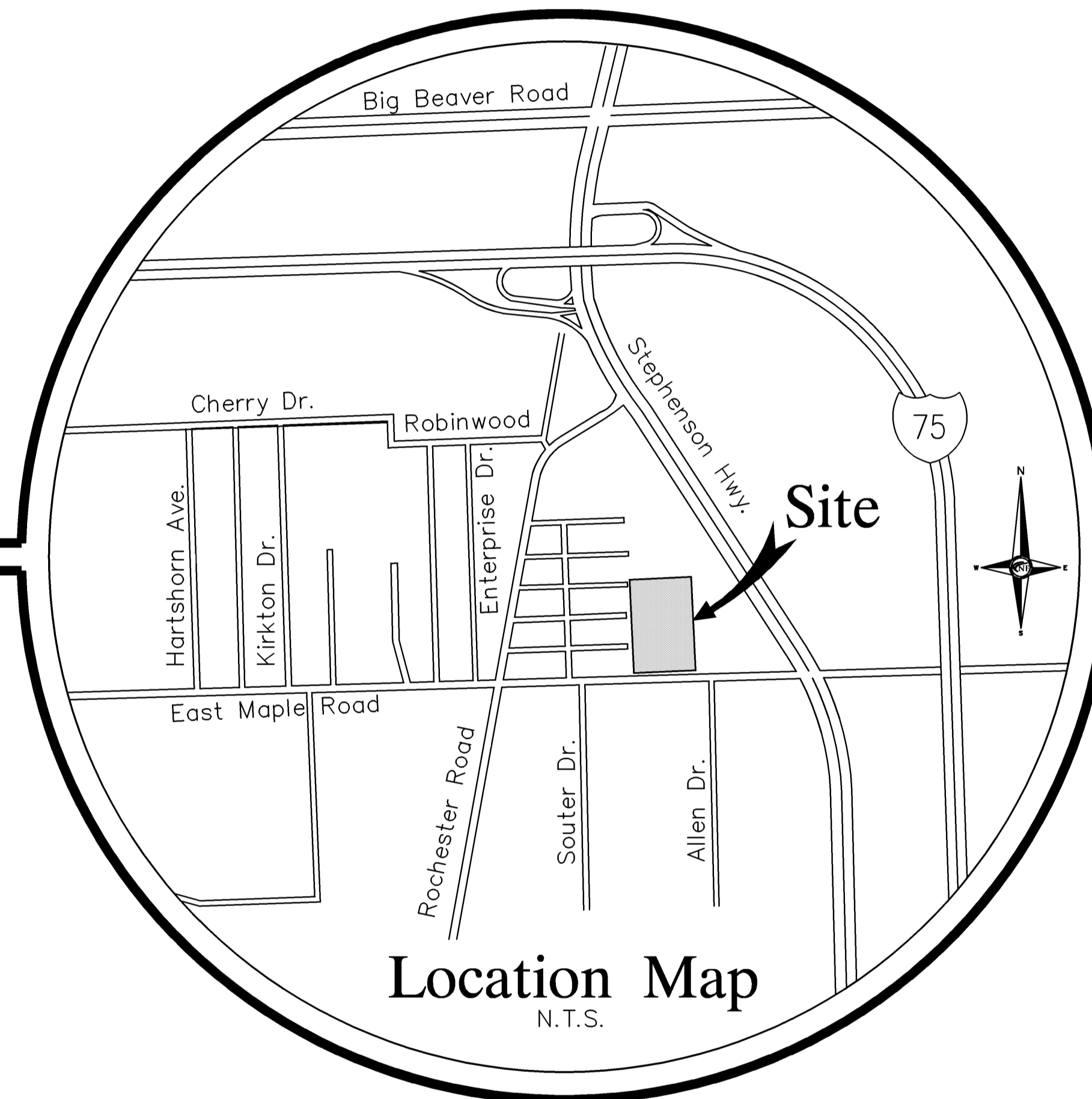


City of Troy,  
Oakland County, Michigan

CONSTRUCTION PLAN PACKAGE

Prepared For:  
PENSKE AUTOMOTIVE GROUP, LLC.



|            |                               |
|------------|-------------------------------|
| REVISIONS: |                               |
| 09-26-14   | ISSUED FOR ENGINEERING 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**

- C-0 COVER SHEET
- C-1 BOUNDARY, TOPOGRAPHIC, AND TREE SURVEY
- C-2 DEMOLITION PLAN
- C-3 ENGINEERING PLAN
- C-4 UTILITY PROFILES AND DETAILS
- C-5 UTILITY PROFILES
- C-6 NOTES AND DETAILS PLAN
- C-7 SOIL EROSION AND SEDIMENTATION CONTROL PLAN

- L-1 TREE PRESERVATION PLAN
- L-2 LANDSCAPE PLAN

1 of 1 PHOTOMETRIC PLAN

CITY OF TROY - STORM DETAIL SHEET  
CITY OF TROY - SOIL EROSION DETAIL SHEET

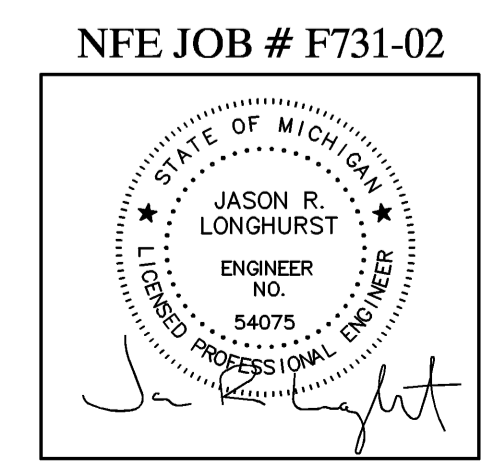
Project Name:

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 45 SECONDS EAST, A 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, A 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 1/4 OF SECTION 26 AND 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; 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 14 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 OF 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.



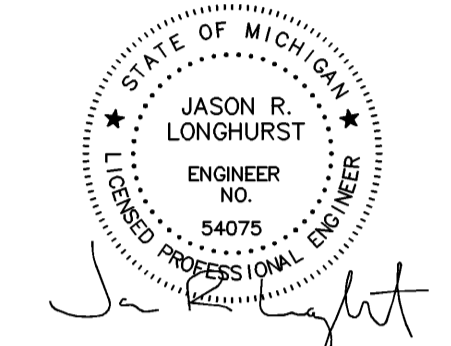
**NF ENGINEERS**  
CIVIL ENGINEERS  
LAND SURVEYORS  
LAND PLANNERS

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





SEAL



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 1/4  
 of Section 26  
 T.2 North, R.11 East  
 City of Troy, Oakland County,  
 Michigan

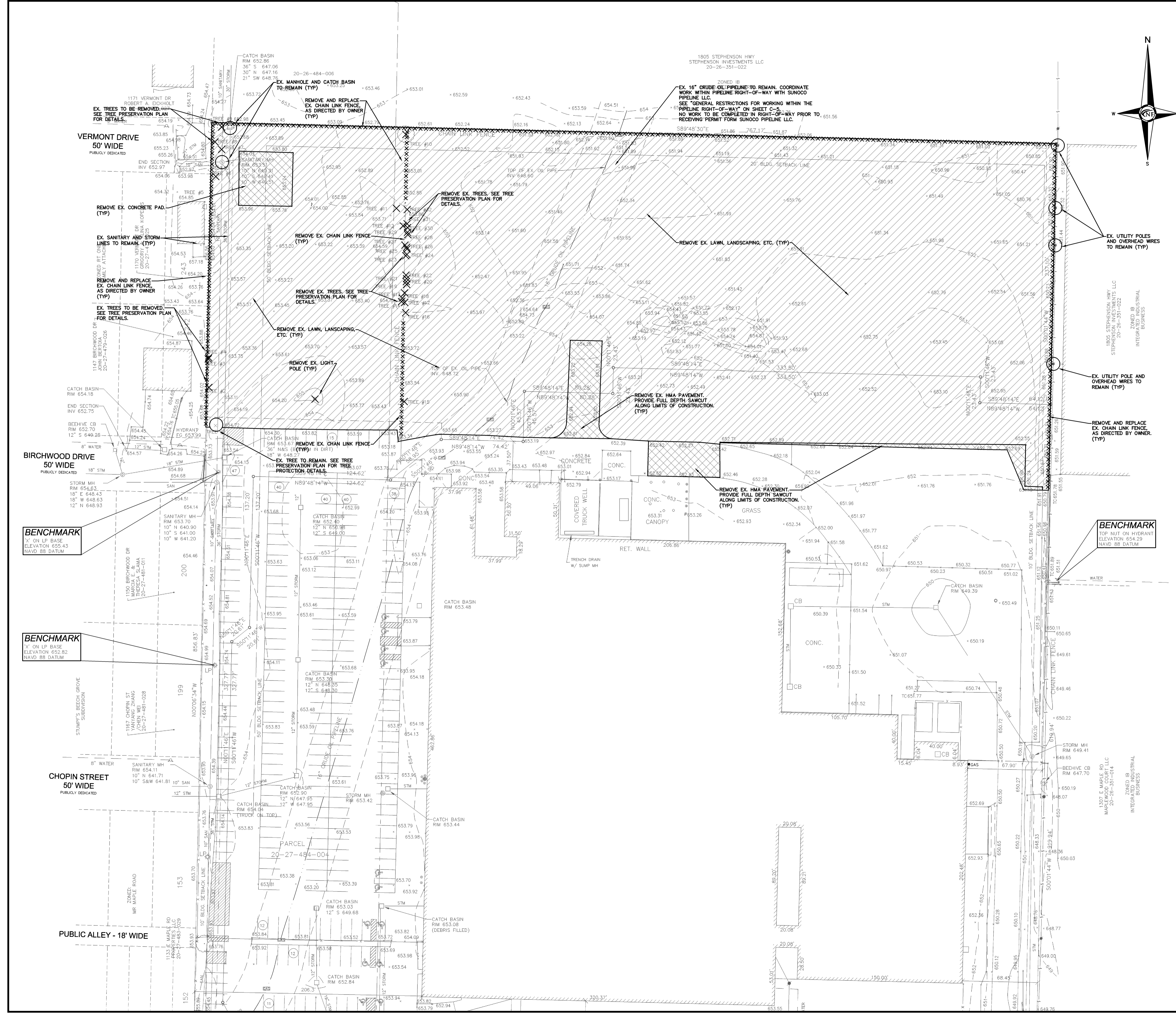
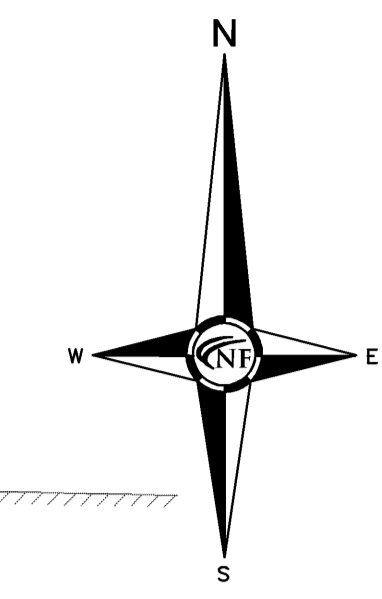
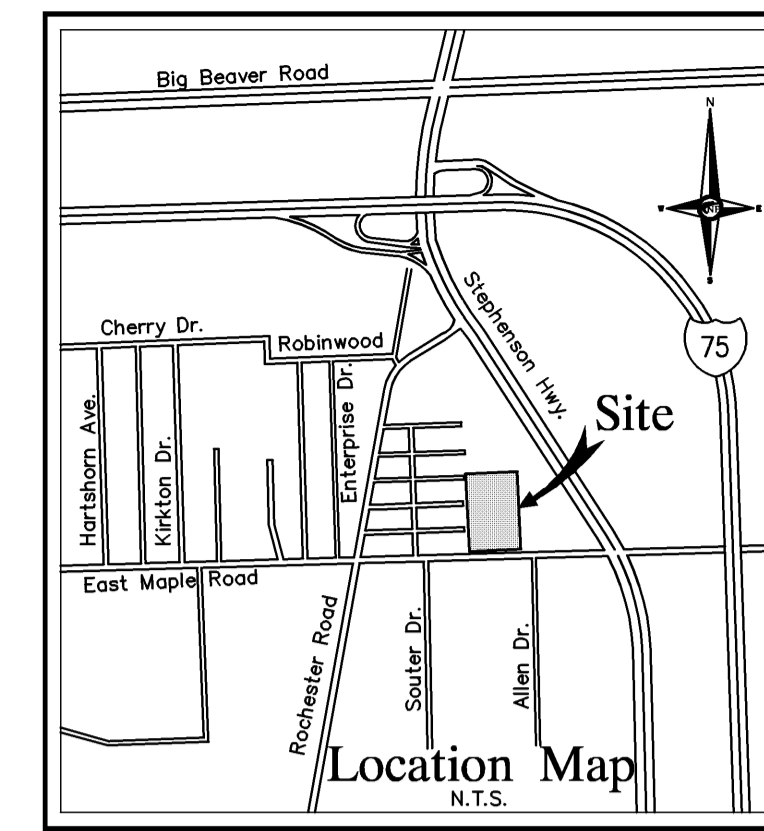
SHEET  
 Demolition Plan



REVISIONS  
 09-26-14 ISSUED FOR ENGINEERING 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. SHEET NO.  
**F731-02 C-2**



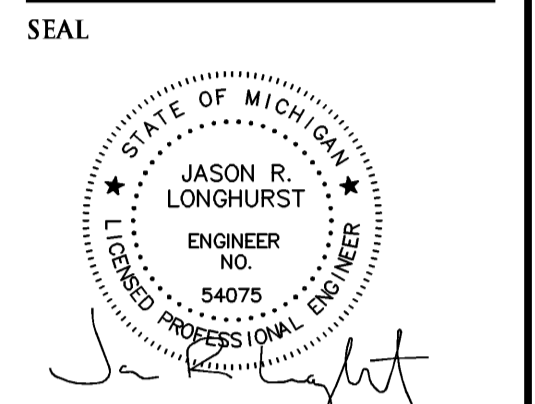
**DEMOLITION NOTES**  
 DEMOLITION OF SITE IMPROVEMENTS SHALL BE ALLOWED ONLY AFTER AN APPROVED PERMIT HAS BEEN SECURED FROM THE PUBLIC AGENCY HAVING JURISDICTION OVER SAID DEMOLITION.  
 FOR ANY DEMOLITION WITHIN PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL PAY FOR, AND SECURE, ALL NECESSARY PERMITS AND LICENSES AS DIRECTED BY OWNER.  
 SITE DEMOLITION INCLUDES THE COMPLETE REMOVAL OF SITE IMPROVEMENTS AND OFF-SITE DISPOSAL DEBRIS SHALL BE TRANSPORTED TO AN APPROPRIATE DISPOSAL FACILITY THAT IS LICENSED FOR THAT TYPE OF DEBRIS.  
 THE CONTRACTOR SHALL COORDINATE TRUCK ROUTES WITH THE MUNICIPALITY PRIOR TO COMMENCEMENT OF SITE DEMOLITION. ALL TRUCKS SHALL BE TARPED OR PROPERLY SECURED TO CONTAIN DEMOLITION DEBRIS PRIOR TO LEAVING SITE.  
 EXISTING ON-SITE UNDERGROUND UTILITIES AND BUILDING SERVICES HAVE BEEN INDICATED BASED UPON THE BEST AVAILABLE UTILITY RECORDS AND/OR ON-SITE INSPECTION. NO GUARANTEE IS MADE BY THE DESIGN ENGINEER, AS TO THE COMPLETENESS OR ACCURACY OF UTILITY DATA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF UTILITY INFORMATION (THE DESIGN ENGINEER MAKES NO GUARANTEE NOR ASSUMES ANY LIABILITY AS TO THE COMPLETENESS AND/OR ACCURACY OF UTILITY DATA).  
 PRIOR TO THE REMOVAL OR ABANDONMENT OF ANY EXISTING UNDERGROUND UTILITY OR BUILDING SERVICE LINES CALLED FOR IN THE PLANS OR DISCOVERED DURING EXCAVATION, THE CONTRACTOR MUST DETERMINE IF THE UTILITY LINE OR BUILDING SERVICE IS STILL IN USE. IF THE UTILITY LINE OR BUILDING SERVICE IS STILL IN USE/ACTIVE THE CONTRACTOR MUST TAKE ALL THE NECESSARY STEPS TO GUARANTEE THAT THE UTILITY LINE OR BUILDING SERVICE IS RECONNECTED WITHOUT AN INTERRUPTION IN SERVICE. THE RECONNECTION OF THE UTILITY LINE OR BUILDING SERVICE MUST BE IN ACCORDANCE WITH THE STANDARDS AND REQUIREMENTS OF THE APPROPRIATE GOVERNMENTAL AGENCY OR PRIVATE UTILITY COMPANY.  
 SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED BY THE CONTRACTOR PRIOR TO SITE DEMOLITION.  
 \* THE CONTRACTOR SHALL NOTIFY MISS DIO ((1-800-482-7171)) A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE START OF THE SITE DEMOLITION.  
 THE CONTRACTOR SHALL COORDINATE THE REMOVAL AND/OR RELOCATION OF EXISTING UTILITY POLES AND UTILITY SERVICES WITH THE APPROPRIATE UTILITY SERVICE PROVIDER. REMOVAL OF SERVICES SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND REQUIREMENTS OF THE UTILITY COMPANY.  
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF PRIVATE UTILITY COMPANIES AND COORDINATE UTILITY SERVICE SHUT OFF/DISCONNECT, PRIOR TO DEMOLITION OF EXISTING STRUCTURES OR PROPERTIES.  
 ANY ON-SITE STORM SEWER FACILITIES LOCATED DURING DEMOLITION SHALL BE REMOVED AND BULK HEADED AT THE PROPERTY LINE IF INDICATED FOR REMOVAL ON THE PLANS.

**TOPOGRAPHIC SURVEY NOTES**  
 ALL ELEVATIONS ARE EXISTING ELEVATIONS, UNLESS OTHERWISE NOTED.  
 UTILITY LOCATIONS WERE OBTAINED FROM MUNICIPAL OFFICIALS AND RECORDS OF UTILITY COMPANIES, AND NO GUARANTEE CAN BE MADE TO THE COMPLETENESS, OR EXACTNESS OF LOCATION.  
 THIS SURVEY MAY NOT SHOW ALL EASEMENTS OF RECORD UNLESS AN UPDATED TITLE POLICY IS FURNISHED TO THE SURVEYOR BY THE OWNER

**LEGEND**

|  |  |  |   |
|--|--|--|---|
|  | EXISTING MANHOLE   |  | EXISTING SANITARY SEWER                   |
|  | EXISTING HYDRANT   |  | EXISTING SAN. CLEAN OUT                   |
|  | EXISTING MANHOLE CATCH BASIN                             |  | EXISTING WATER MAIN                       |
|  | EXISTING UTILITY POLE                                    |  | EXISTING STORM SEWER                      |
|  | EXISTING GUY WIRE  |  | EX. R. Y. CATCH BASIN                     |
|  | EXISTING OVERHEAD LINES                                  |  | EXISTING BURIED CABLES                    |
|  | EXISTING LIGHT POLE                                      |  | OVERHEAD LINES                            |
|  | EXISTING SIGN  |  | LIGHT POLE                                |
|  | EXISTING GAS MAIN  |  | SIGN                                      |
|  | EXISTING FENCE TO BE REMOVED                             |  | EXISTING GAS MAIN                         |
|  | INDICATES EXISTING TREE TO BE REMOVED                    |  | EXISTING FENCE TO BE REMOVED              |
|  | INDICATES AREAS OF LAWN, LANDSCAPING, ETC. TO BE REMOVED |  | INDICATES AREAS OF PAVEMENT TO BE REMOVED |





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 1/4  
 of Section 26  
 T.2 North, R.11 East  
 City of Troy, Oakland County,  
 Michigan

SHEET  
 Engineering Plan



REVISIONS  
 09-26-14 ISSUED FOR ENGINEERING REVIEW

DRAWN BY:  
 J. Klenk

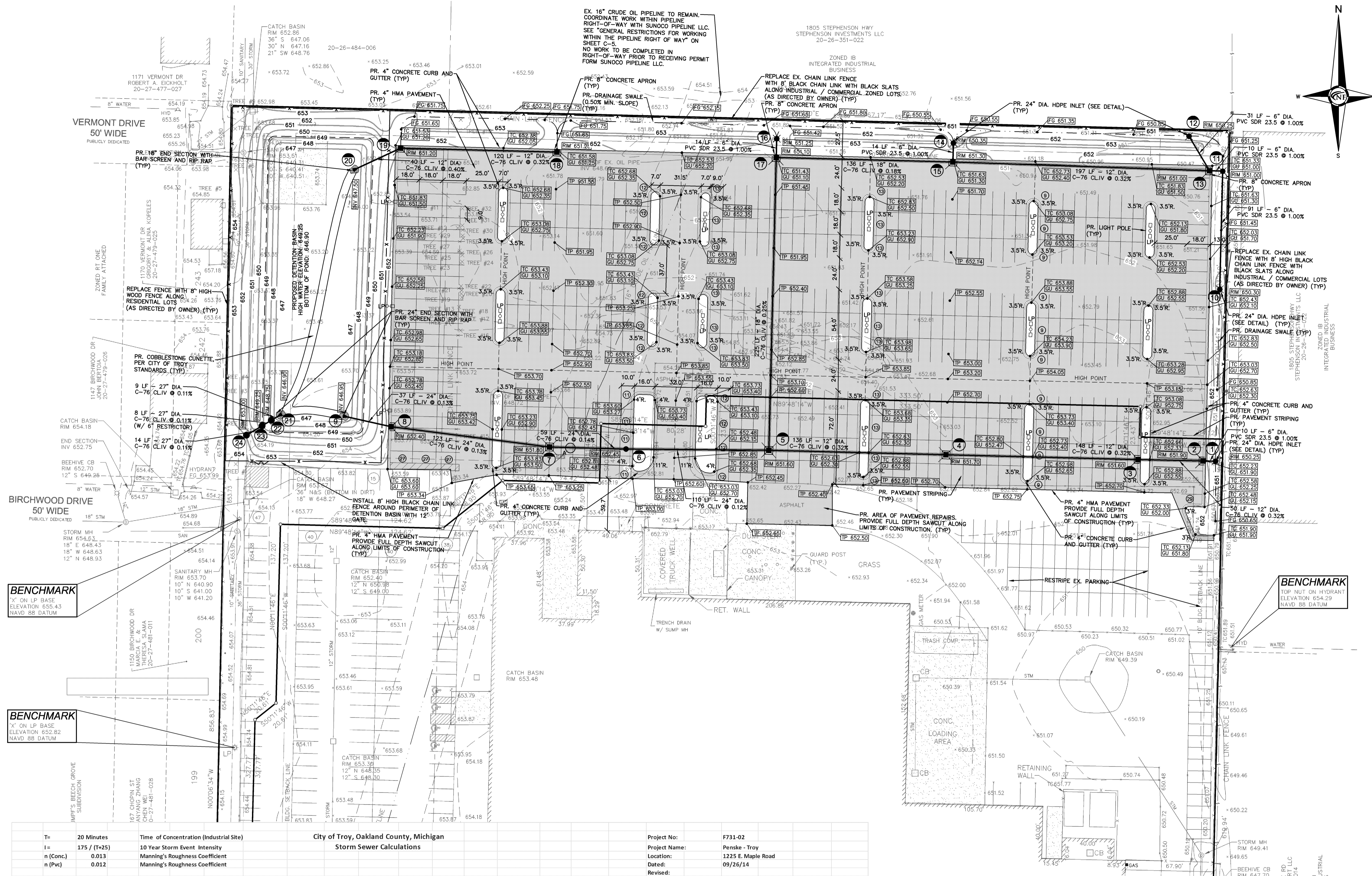
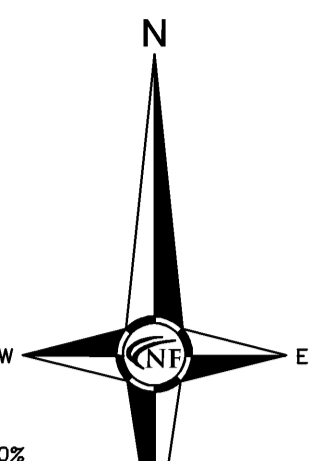
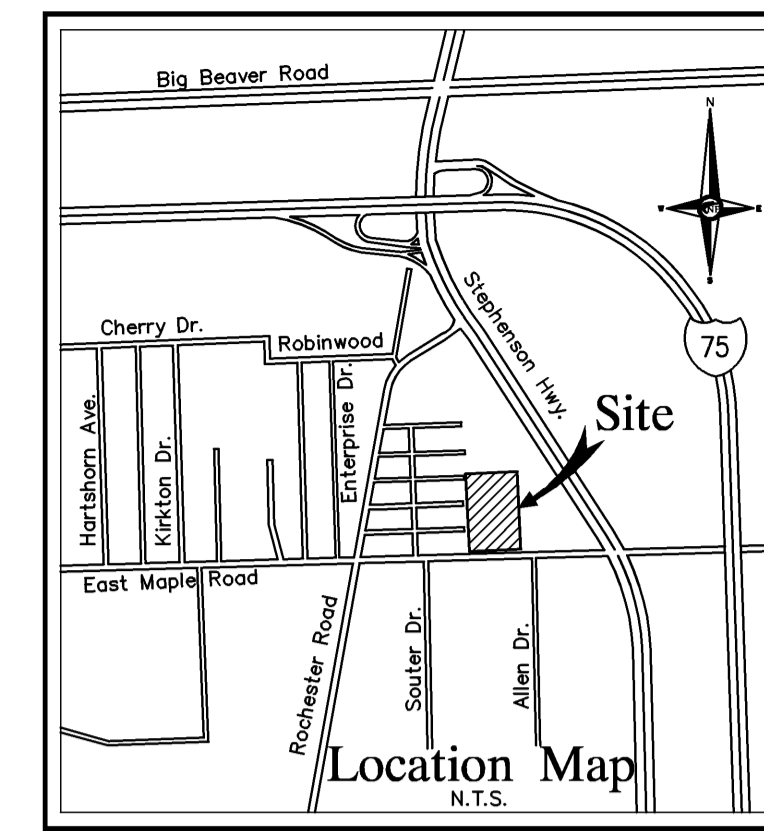
DESIGNED BY:  
 J. Longhurst

APPROVED BY:  
 J. Longhurst

DATE:  
 September 26, 2014

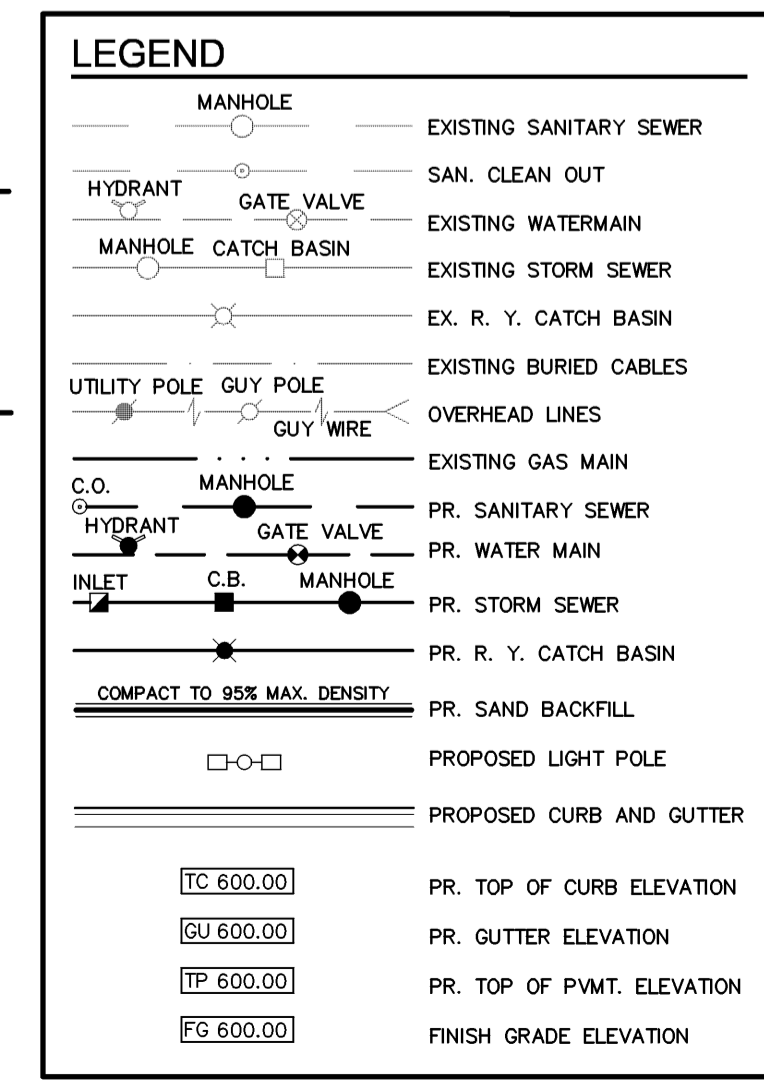
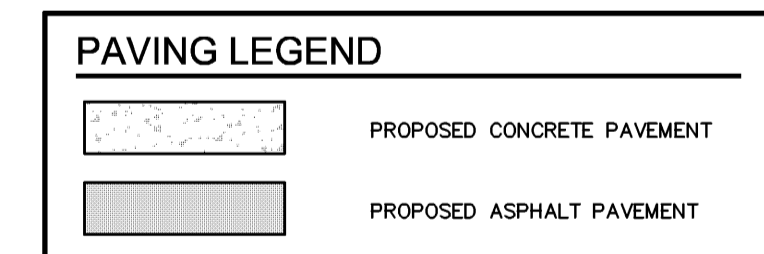
SCALE: 1" = 40'

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



**STORM STRUCTURE SCHEDULE**

- 1 2" DIA. HDPE INLET W/2" SUMP RIM 650.22 6" W. INV. 648.46
- 2 4" DIA CATCH BASIN W/2" SUMP RIM 651.90 6" E INV. 648.72 12" W INV. 648.72
- 3 4" DIA CATCH BASIN W/2" SUMP RIM 651.60 6" E INV. 648.36 12" W INV. 648.36
- 4 4" DIA CATCH BASIN W/2" SUMP RIM 651.70 6" N INV. 648.09 18" W INV. 648.09
- 5 5" DIA CATCH BASIN W/2" SUMP RIM 651.80 6" N INV. 647.73 12" W INV. 647.73
- 6 4" DIA MANHOLE W/2" SUMP RIM 652.45 24" E INV. 647.16 24" W INV. 642.90
- 7 4" DIA CATCH BASIN W/2" SUMP RIM 651.80 6" N INV. 647.85 18" S INV. 647.85
- 8 4" DIA CATCH BASIN W/2" SUMP RIM 651.25 12" W INV. 648.04
- 9 4" DIA CATCH BASIN W/2" SUMP RIM 651.20 12" E INV. 647.66 24" W INV. 647.66
- 10 4" DIA CATCH BASIN W/2" SUMP RIM 651.20 12" W INV. 647.50
- 11 2" DIA. HDPE INLET W/2" SUMP RIM 650.30 6" S INV. 648.82 6" W INV. 648.82
- 12 2" DIA. HDPE INLET W/2" SUMP RIM 650.25 6" S INV. 649.03
- 13 4" DIA CATCH BASIN W/2" SUMP RIM 651.25 12" W INV. 648.04
- 14 2" DIA. HDPE INLET W/2" SUMP RIM 650.30 6" S INV. 648.23 6" W INV. 648.23
- 15 4" DIA CATCH BASIN W/2" SUMP RIM 651.20 12" W INV. 647.50
- 16 2" DIA. HDPE INLET W/2" SUMP RIM 650.30 6" S INV. 648.82 6" W INV. 648.82
- 17 4" DIA CATCH BASIN W/2" SUMP RIM 651.20 12" W INV. 647.50
- 18 4" DIA CATCH BASIN W/2" SUMP RIM 651.20 12" W INV. 647.50
- 19 4" DIA CATCH BASIN W/2" SUMP RIM 651.20 12" W INV. 647.50
- 20 2" DIA. HDPE INLET W/2" SUMP RIM 650.30 6" S INV. 648.82 6" W INV. 648.82
- 21 2" DIA. HDPE INLET W/2" SUMP RIM 650.30 6" S INV. 648.82 6" W INV. 648.82
- 22 4" DIA DRAINAGE STRUCTURE W/2" SUMP RIM 649.95 27" NE INV. 646.89 27" SW INV. 646.89
- 23 4" DIA OVERFLOW STRUCTURE W/2" SUMP RIM 649.25 27" NE INV. 646.89 27" SW INV. 646.89
- 24 6" DIA MANHOLE RIM 653.50 27" NE INV. 646.88 36" N/S INV. 646.88 (V.I.F.)



City of Troy, Oakland County, Michigan  
 Storm Sewer Calculations

Project No: F731-02  
 Project Name: Penske - Troy  
 Location: 1225 E. Maple Road  
 Date: 09/26/14  
 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 (Feet) | H. G. Elev. Lower (Feet) | H. G. Slope (% Slope) | Theoretical Velocity (Ft/Sec) | Rim Elevation (Upper) | Change in Elevation (Feet) | Invert Elev. Upper (Feet) | Invert Elev. Lower (Feet) |
|--------------------------|---------------------|-------------------|-----------------------|------------------------|-----------------------|----------------------|---------------------------------|--------------------------------|------------------------|--------------------|----------------------|--------------------|-----------------------------|------------------------|--------------------------|--------------------------|--------------------------|-----------------------|-------------------------------|-----------------------|----------------------------|---------------------------|---------------------------|
| K                        | 1                   | 2                 | 0.060                 | 0.200                  | 0.012                 | 0.012                | 20.00                           | 3.889                          | 0.047                  | 6                  | 1.00                 | 10                 | 2.858                       | 0.06                   | 0.56                     | 648.62                   | 648.62                   | 0.0069                | 0.238                         | 650.25                | 0.10                       | 648.46                    | 648.36                    |
| L                        | 2                   | 3                 | 0.090                 | 0.850                  | 0.077                 | 0.089                | 20.06                           | 3.884                          | 0.344                  | 12                 | 0.32                 | 50                 | 2.566                       | 0.32                   | 2.02                     | 648.62                   | 648.62                   | 0.0093                | 0.438                         | 651.90                | 0.16                       | 648.36                    | 648.20                    |
| M                        | 3                   | 4                 | 0.170                 | 0.850                  | 0.145                 | 0.233                | 20.38                           | 3.856                          | 0.898                  | 12                 | 0.32                 | 148                | 2.566                       | 0.96                   | 2.02                     | 648.62                   | 648.53                   | 0.0636                | 1.144                         | 651.60                | 0.47                       | 648.20                    | 647.73                    |
| N                        | 4                   | 5                 | 0.230                 | 0.850                  | 0.196                 | 0.429                | 21.34                           | 3.776                          | 1.618                  | 12                 | 0.32                 | 136                | 2.566                       | 0.88                   | 2.02                     | 648.37                   | 648.09                   | 0.2063                | 2.060                         | 651.70                | 0.44                       | 647.73                    | 647.29                    |
| A                        | 10                  | 11                | 0.030                 | 0.200                  | 0.006                 | 0.006                | 20.00                           | 3.889                          | 0.023                  | 6                  | 0.50                 | 91                 | 2.021                       | 0.75                   | 0.40                     | 649.12                   | 649.12                   | 0.0017                | 0.119                         | 650.30                | 0.46                       | 649.28                    | 648.82                    |
| B                        | 11                  | 13                | 0.020                 | 0.200                  | 0.004                 | 0.010                | 20.75                           | 3.825                          | 0.038                  | 6                  | 1.00                 | 10                 | 2.858                       | 0.06                   | 0.56                     | 649.12                   | 649.12                   | 0.0046                | 0.195                         | 651.00                | 0.10                       | 648.82                    | 648.72                    |
| C                        | 12                  | 13                | 0.080                 | 0.200                  | 0.016                 | 0.016                | 20.00                           | 3.889                          | 0.062                  | 6                  | 1.00                 | 31                 | 2.858                       | 0.18                   | 0.56                     | 649.12                   | 649.12                   | 0.0123                | 0.317                         | 650.25                | 0.31                       | 649.03                    | 648.72                    |
| D                        | 13                  | 15                | 0.530                 | 0.790                  | 0.419                 | 0.445                | 20.81                           | 3.820                          | 1.699                  | 12                 | 0.32                 | 197                | 2.566                       | 1.28                   | 2.02                     | 649.34                   | 648.89                   | 0.2274                | 2.163                         | 651.00                | 0.63                       | 648.72                    | 648.09                    |
| E                        | 14                  | 15                | 0.080                 | 0.200                  | 0.016                 | 0.016                | 20.00                           | 3.889                          | 0.062                  | 6                  | 1.00                 | 14                 | 2.858                       | 0.08                   | 0.56                     | 648.49                   | 648.49                   | 0.0123                | 0.317                         | 650.35                | 0.14                       | 648.23                    | 648.09                    |
| F                        | 15                  | 17                | 0.490                 | 0.770                  | 0.377                 | 0.838                | 22.09                           | 3.716                          | 3.114                  | 18                 | 0.18                 | 136                | 2.522                       | 0.90                   | 4.46                     | 649.07                   | 648.95                   | 0.0879                | 1.762                         | 651.30                | 0.24                       | 648.09                    | 647.85                    |
| G                        | 16                  | 17                | 0.090                 | 0.200                  | 0.018                 | 0.018                | 20.00                           | 3.889                          | 0.070                  | 6                  | 1.00                 | 14                 | 2.858                       | 0.08                   | 0.56                     | 648.25                   | 648.25                   | 0.0156                | 0.357                         | 651.35                | 0.14                       | 647.99                    | 647.85                    |
| H                        | 17                  | 5                 | 0.560                 | 0.790                  | 0.442                 | 1.298                | 22.99                           | 3.647                          | 4.735                  | 18                 | 0.25                 | 225                | 2.972                       | 1.26                   | 5.25                     | 648.95                   | 648.49                   | 0.2032                | 2.679                         | 651.10                | 0.56                       | 647.85                    | 647.29                    |
| O                        | 5                   | 6                 | 0.320                 | 0.850                  | 0.272                 | 1.999                | 24.25                           | 3.553                          | 7.103                  | 24                 | 0.12                 | 110                | 2.494                       | 0.73                   | 7.84                     | 648.87                   | 648.76                   | 0.0986                | 2.621                         | 651.60                | 0.13                       | 647.29                    | 647.16                    |
| 6                        | 7                   | 0.000             | 0.000                 | 0.000                  | 1.999                 | 24.98                | 3.501                           | 6.998                          | 24                     | 0.12               | 59                   | 2.494              | 0.39                        | 7.84                   | 648.79                   | 648.74                   | 0.0957                   | 2.228                 | 652.45                        | 0.07                  | 642.90                     | 642.82                    |                           |
| P                        | 7                   | 8                 | 0.240                 | 0.850                  | 0.204                 | 2.203                | 25.38                           | 3.474                          | 7.652                  | 24                 | 0.13                 | 123                | 2.596                       | 0.79                   | 8.16                     | 648.74                   | 648.60                   | 0.1144                | 2.436                         | 651.80                | 0.16                       | 647.16                    | 647.00                    |
| Q                        | 8                   | 9                 | 0.150                 | 0.850                  | 0.128                 | 2.330                | 26.17                           | 3.420                          | 7.970                  | 24                 | 0.13                 | 37                 | 2.596                       | 0.24                   | 8.16                     | 648.60                   | 648.55                   | 0.1241                | 2.537                         | 652.40                | 0.05                       | 647.00                    | 646.95                    |
| I                        | 18                  | 19                | 0.620                 | 0.790                  | 0.490                 | 0.490                | 20.00                           | 3.889                          | 1.905                  | 12                 | 0.32                 | 120                | 2.566                       | 0.78                   | 2.02                     | 648.71                   | 648.37                   | 0.2858                | 2.425                         | 651.25                | 0.38                       | 648.04                    | 647.66                    |
| J                        | 19                  | 20                | 0.380                 | 0.760                  | 0.289                 | 0.779                | 20.78                           | 3.823                          | 2.976                  | 12                 | 0.40                 | 40                 | 2.869                       | 0.23                   | 2.25                     | 648.37                   | 648.09                   | 0.6979                | 3.790                         | 651.20                | 0.16                       | 647.66                    | 647.50                    |

**ESTIMATED QUANTITIES PAVING**

| DESCRIPTION                       | QUANTITY | UNITS |
|-----------------------------------|----------|-------|
| 4" ASPHALT ON 8" 21AA BASE        | 16,350   | S.Y.  |
| 8" NON-REINFORCED CONCRETE BOXOUT | 30       | S.Y.  |
| CONCRETE CURB & GUTTER            | 3,053    | L.F.  |

**STORM SEWER**

| DESCRIPTION                    | QUANTITY | UNITS |
|--------------------------------|----------|-------|
| 6" PVC, SDR 23.5, SEWER PIPE   | 170      | L.F.  |
| 12" C-76, CLASS IV, SEWER PIPE | 494      | L.F.  |
| 18" C-76, CLASS IV, SEWER PIPE | 361      | L.F.  |
| 24" C-76, CLASS IV, SEWER PIPE | 360      | L.F.  |
| 2" DIA. HDPE INLET             | 4        | EA.   |
| 4" DIA. CATCH BASIN W/ 2" SUMP | 10       | EA.   |
| 4" DIA. MANHOLE W/ 2" SUMP     | 3        | EA.   |
| 5" DIA. CATCH BASIN W/ 2" SUMP | 1        | EA.   |
| 6" DIA. MANHOLE                | 1        | EA.   |
| 12" END SECTION W/ BAR SCREEN  | 1        | EA.   |
| 24" END SECTION W/ BAR SCREEN  | 2        | EA.   |
| SEWER TAP/CONNECTION           | 1        | EA.   |

**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      |
| LEFT 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

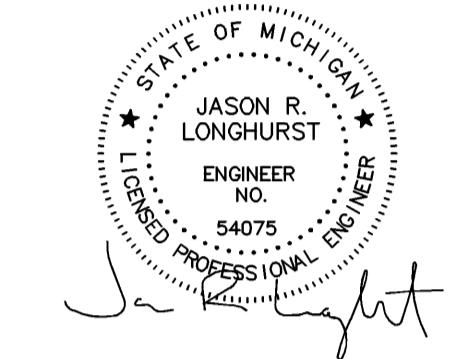
PROPOSED VEHICLE STORAGE SPACES = 572 SPACES

TOTAL PROVIDED SPACES = 827 SPACES

LOT COVERAGE (IMPROVEMENT AREA)  
 PAVEMENT: 146,998 SQ. FT. 70.06%  
 LANDSCAPE: 44,978 SQ. FT. 21.41%  
 DETENTION POND: 17,993 SQ. FT. 8.53%  
 SEWER TAP/CONNECTION: 209,957 SQ. FT. 100.00%



SEAL



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 1/4  
of Section 26  
T.2 North, R.11 East  
City of Troy, Oakland County,  
Michigan

SHEET  
Utility Profiles and Details

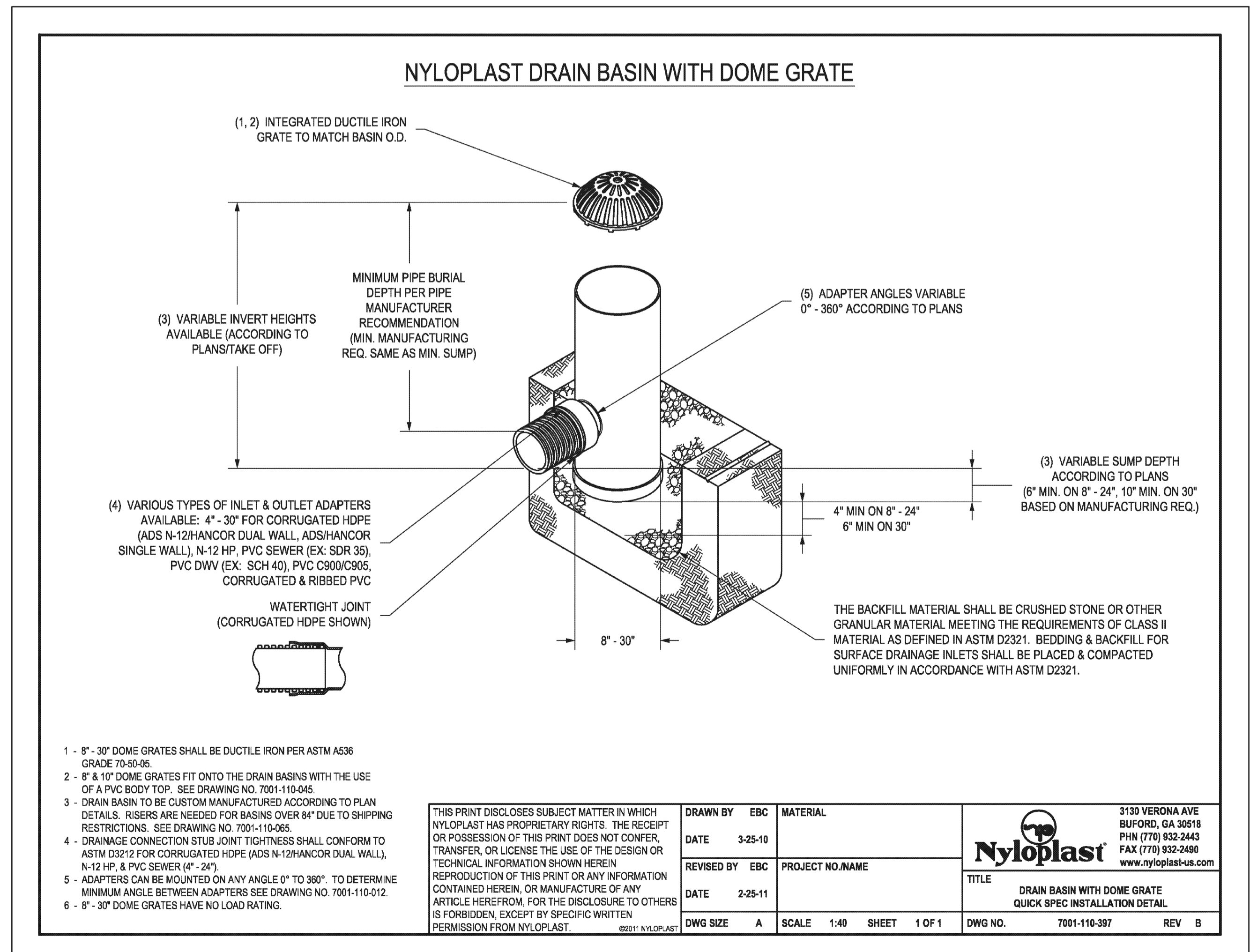
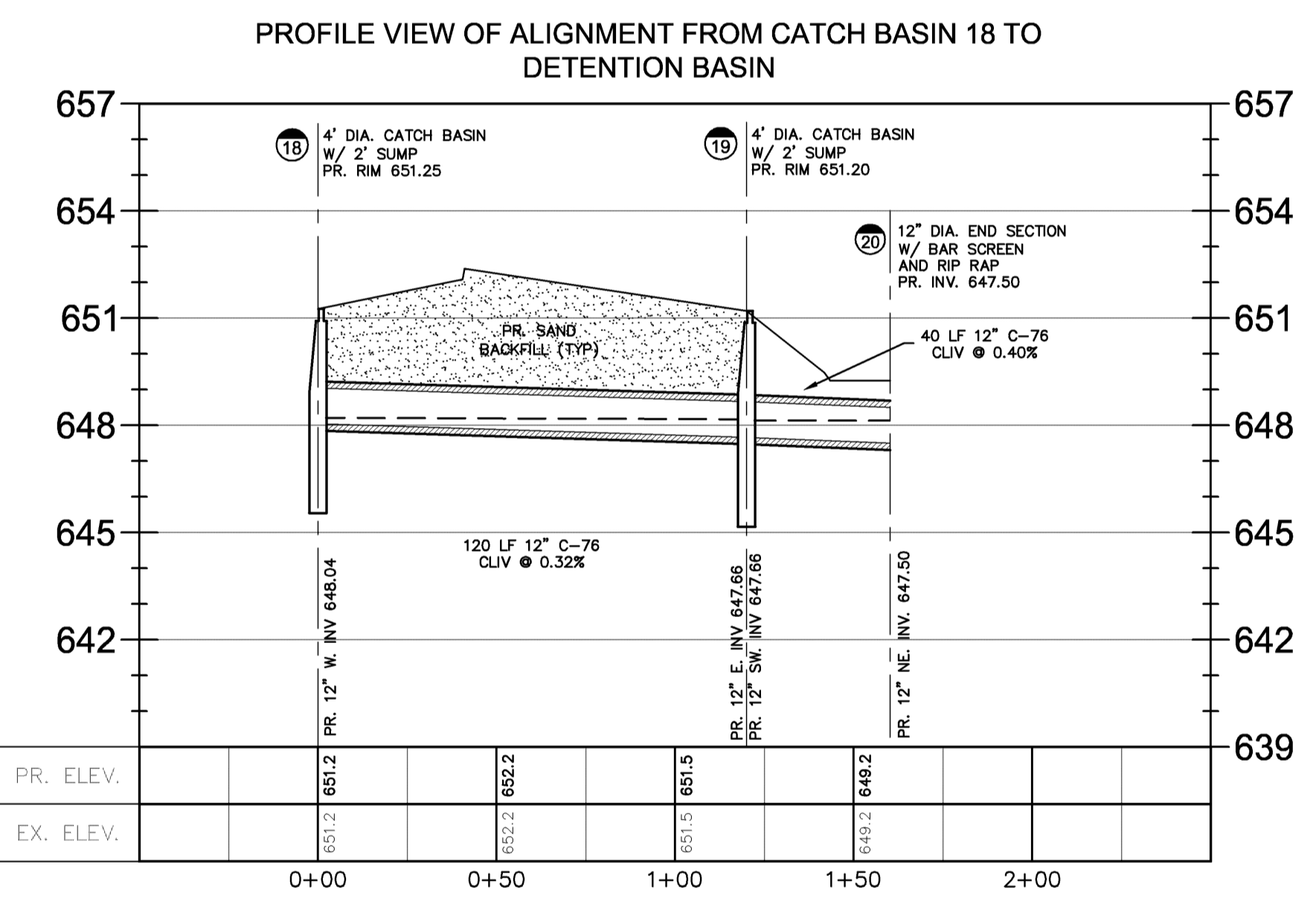
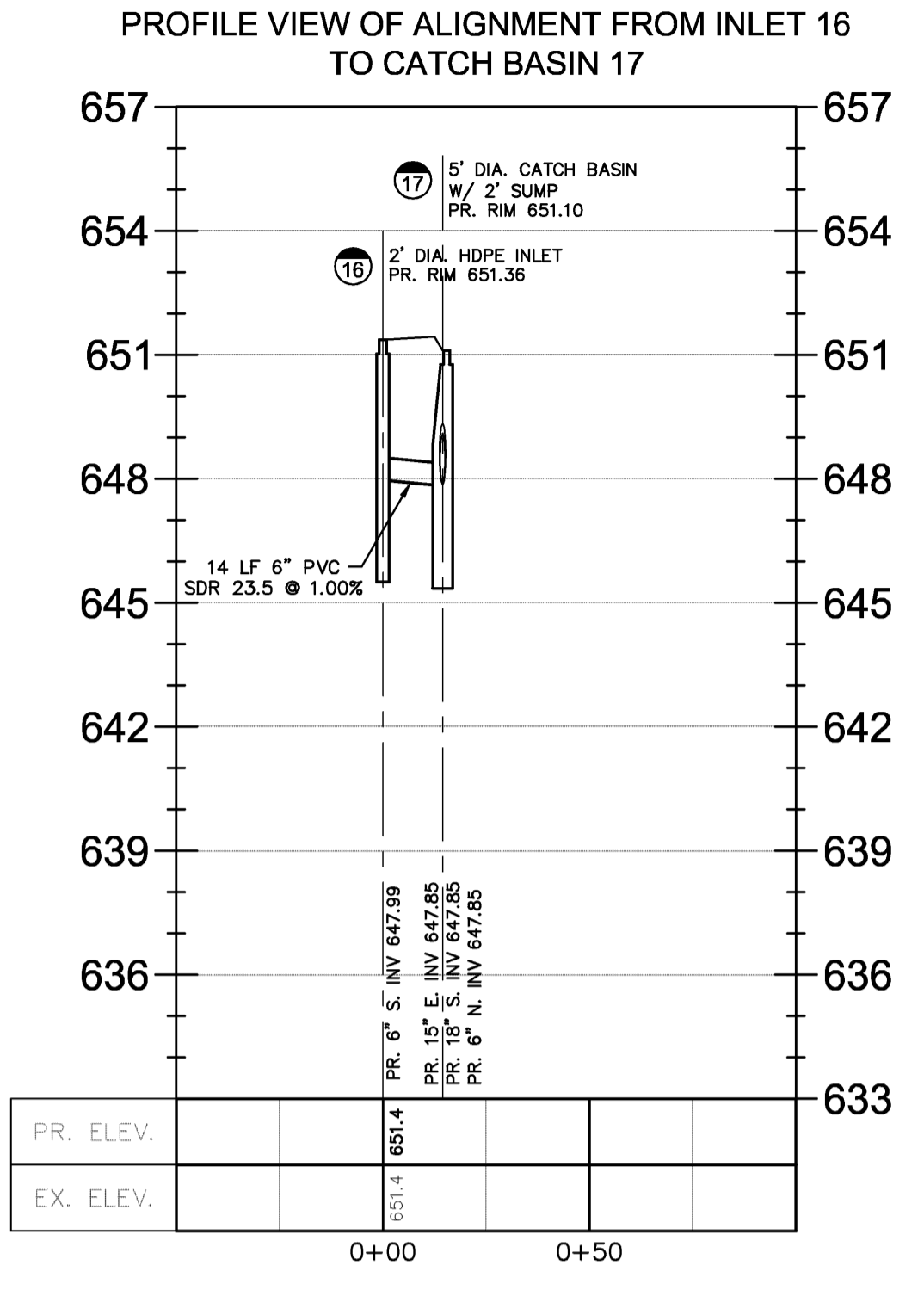
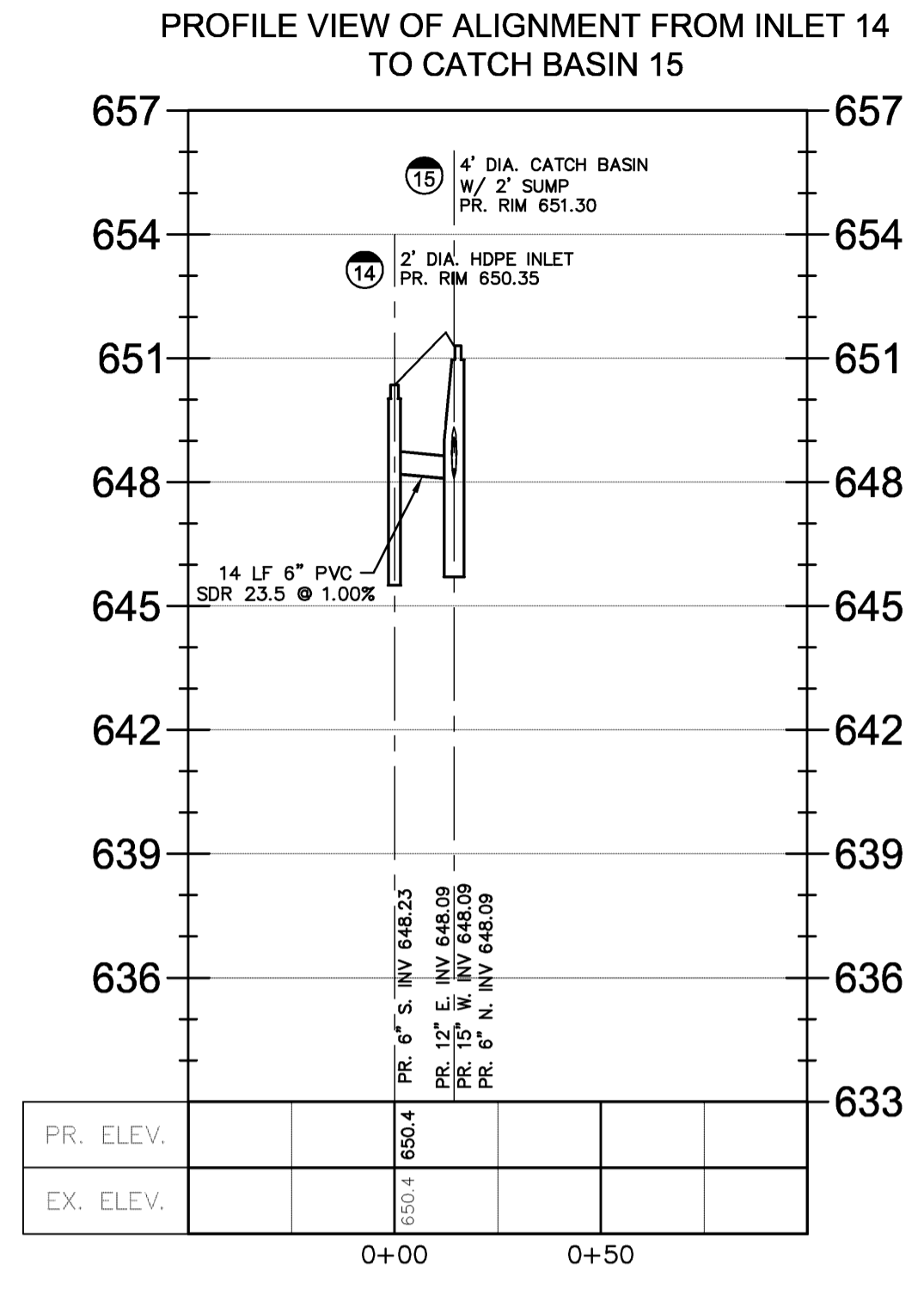
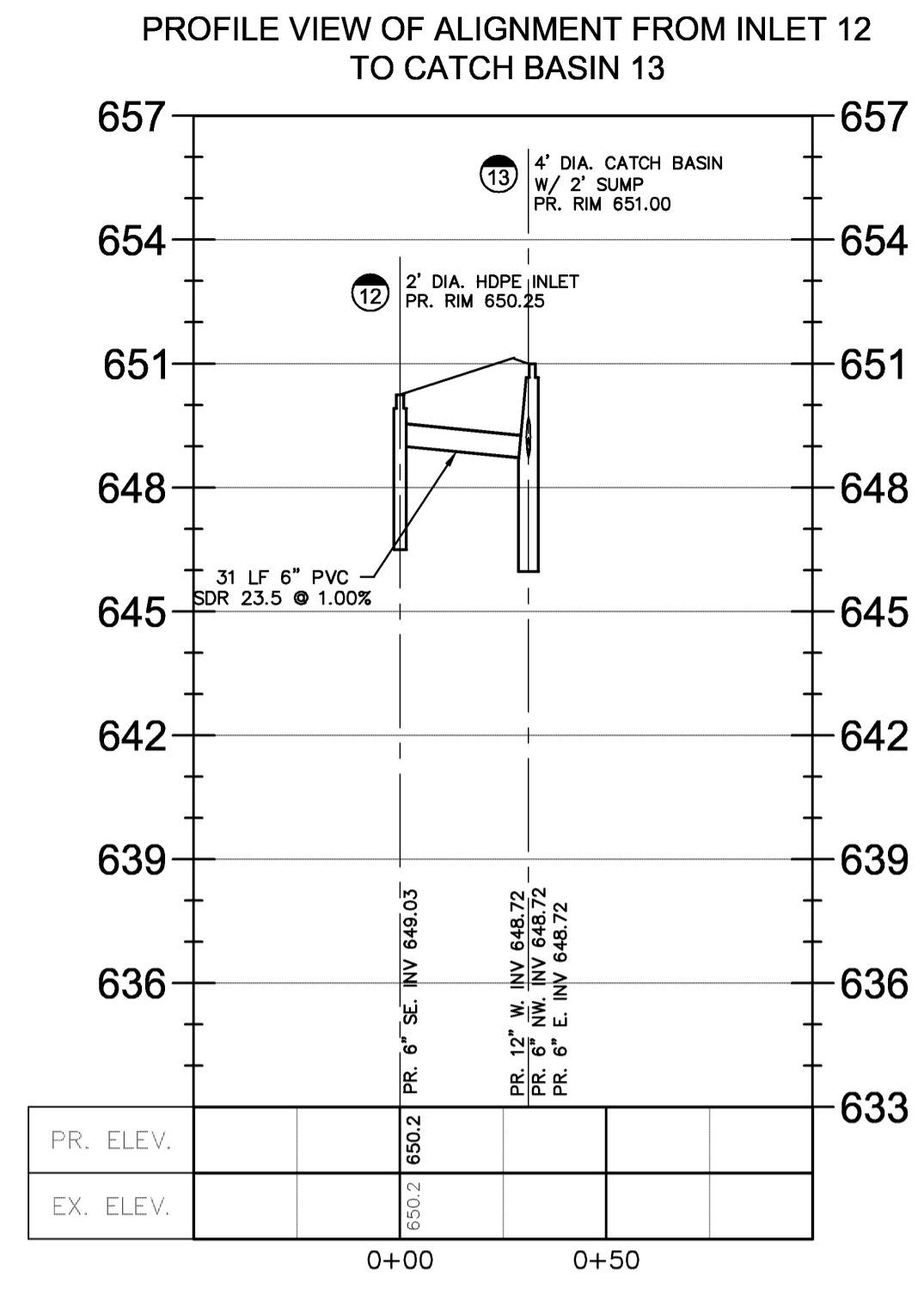


REVISIONS  
09-26-14 ISSUED FOR ENGINEERING REVIEW

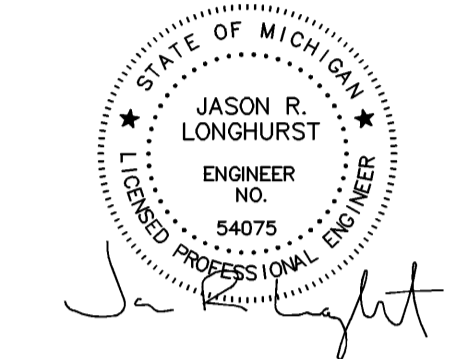
DRAWN BY:  
J. Klenk  
DESIGNED BY:  
J. Longhurst  
APPROVED BY:  
J. Longhurst  
DATE:  
September 26, 2014

SCALE: 1" = 40' / 1" = 4'  
40 20 0 20 40 60

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



SEAL



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 1/4  
of Section 26  
T.2 North, R.11 East  
City of Troy, Oakland County,  
Michigan

SHEET

Utility Profiles



Know what's Below  
Call before you dig.

REVISIONS  
09-26-14 ISSUED FOR ENGINEERING REVIEW

DRAWN BY:  
J. Klenk

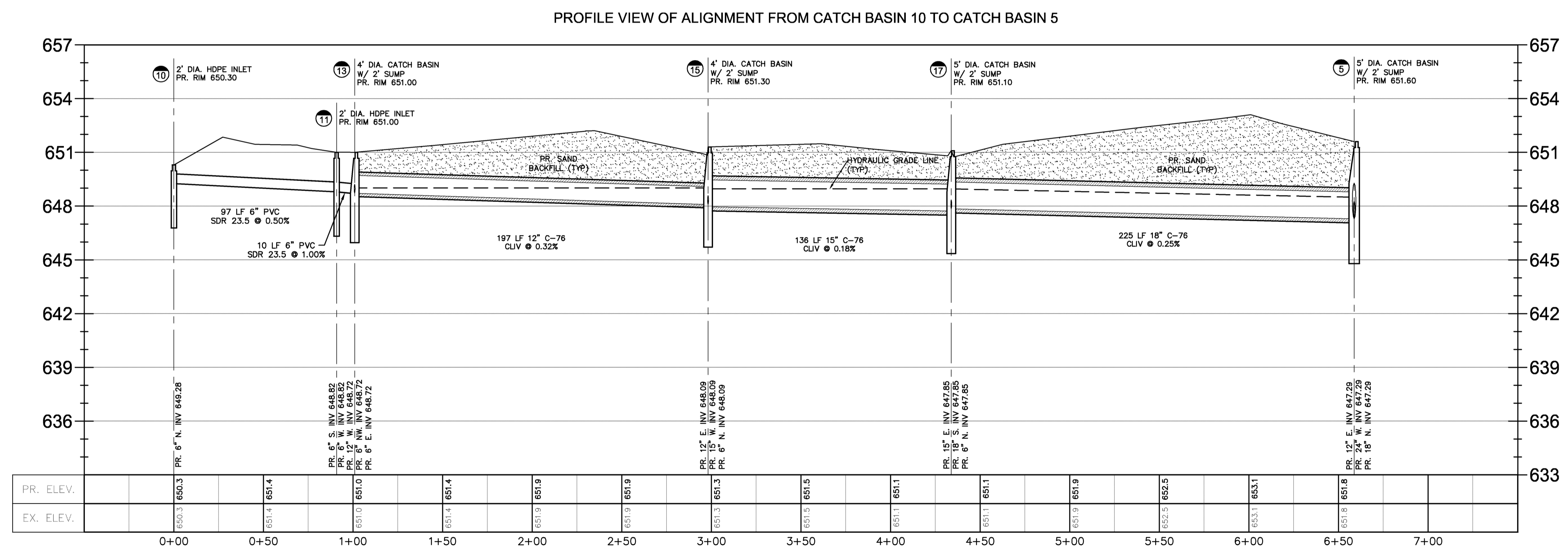
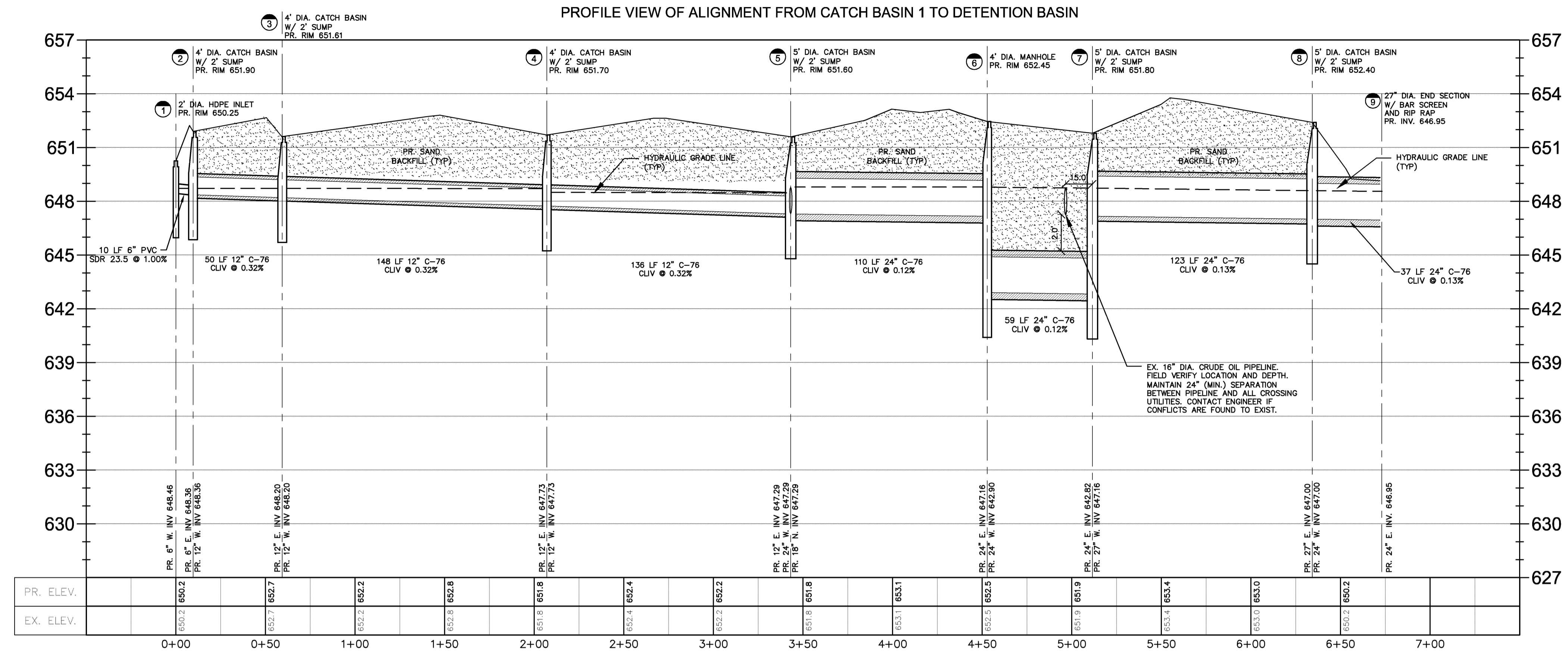
DESIGNED BY:  
J. Longhurst

APPROVED BY:  
J. Longhurst

DATE:  
September 26, 2014

SCALE: 1" = 40' / 1"=4'

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



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                | 3,370 Acres        |
| Detention Basin                                 | 1.00                | 0,410 Acres        |
| Landscape                                       | 0.20                | 1,090 Acres        |
| <b>Total Acreage:</b>                           |                     | <b>4,810 Acres</b> |
| <b>Weighted Runoff Coefficient "C" Factor =</b> |                     | <b>0.759</b>       |

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

|   |                                 |
|---|---------------------------------|
| Contributing Acreage:                       | 4.810 Acres                     |
| Allowable Outflow, Q <sub>a</sub> :         | 0.200 CFS / Acre                |
| Runoff Coefficient, C:                      | 0.759 Imperviousness            |
| Maximum Allowable Outflow, Q <sub>o</sub> : | 0.264 CFS / (Acre * Imperv.)    |
| Ts Storage Time (25 Year):                  | 149.878 Minutes                 |
| Vs Storage Volume (25 Year):                | 9,475.94 CFS / (Acre * Imperv.) |
| Vt Total Volume (25 Year):                  | 34,575.52 Cubic Feet            |
| Volume Required:                            | 34,575.52 Cubic Feet            |
| Volume Provided:                            | 37,486.60 Cubic Feet            |

Restrictor Calculation:

ORIFICE RESTRICTOR

FORMULA: Q = 0.62 \* A \* ((2gh)<sup>0.5</sup>)

|                               |                     |
|-------------------------------|---------------------|
| CONTRIBUTING ACREAGE:         | 4.81 ACRES          |
| Qa ALLOWABLE OUTFLOW:         | 0.20 CFS/ACRE       |
| STORAGE ELEVATION:            | 649.25 FEET         |
| OUTLET ELEVATION:             | 646.90 FEET         |
| DEPTH OF STORAGE:             | 2.35 FEET           |
| Qo MAXIMUM ALLOWABLE OUTFLOW: | 0.962 CFS           |
| REQUIRED RESTRICTOR AREA:     | 0.126 SQUARE FEET   |
| MAXIMUM RESTRICTOR SIZE:      | 4.809 INCH DIAMETER |

PROVIDE 6" RESTRICTOR PIPE (SEE PLAN FOR LOCATION)

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

| Elevation  | Area (S.F.) | Depth (FT.) | Volume (CF)      | Total Volume (CF) |
|--|-------------|-------------|------------------|-------------------|
| 649.25   | 17993.2     | 0.25        | 4,422.15         | 35,185.84         |
| 649  | 17384       | 1           | 16,205.70        | 30,763.69         |
| 648  | 15027.4     | 1           | 19,913.05        | 14,557.99         |
| 647  | 12798.7     | 1           | 644.94           | 644.94            |
| 646.9  | 100         | 0.1         |                  |                   |
| <b>Total Vol. Provided at H.W. Elevation (649.25):</b> |             |             | <b>35,185.84</b> | <b>Cubic Feet</b> |

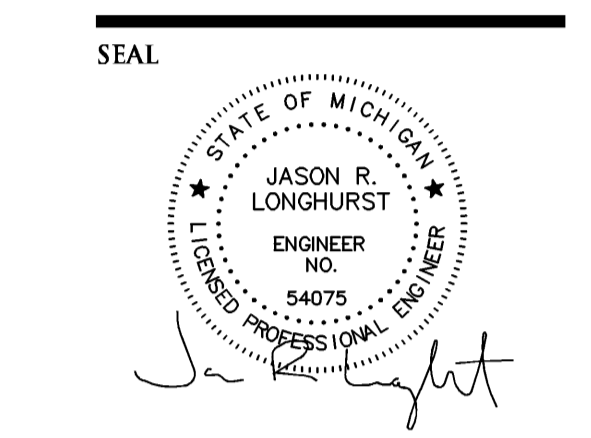
Pipe Storage Provided

| Pipe Dia (inches)                      | X-sec area (sq. ft.) | Length (LF) | Detention Volume           |
|--|----------------------|-------------|----------------------------|
| 24                                     | 3.14                 | 329         | 1034.00 Cubic Feet         |
| 18                                     | 1.77                 | 361         | 638.20 Cubic Feet          |
| 12                                     | 0.79                 | 197         | 154.79 Cubic Feet          |
| <b>Volume Provided - Pipe Storage:</b> |                      |             | <b>1,826.99 Cubic Feet</b> |

Structure Storage Provided

| Str. Dia (inches)                           | X-sec area (sq. ft.) | Depth of Storage (LF) | Detention Volume         |
|---|----------------------|-----------------------|--------------------------|
| 60  | 19.64                | 3                     | 58.93 Cubic Feet         |
| 48  | 12.57                | 3                     | 97.71 Cubic Feet         |
| <b>Number of 60" Diameter Structures:</b>   |                      |                       | <b>1 Each</b>            |
| <b>Number of 48" Diameter Structures:</b>   |                      |                       | <b>11 Each</b>           |
| <b>Volume Provided - Structure Storage:</b> |                      |                       | <b>478.79 Cubic Feet</b> |





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 1/4  
of Section 26  
T.2 North, R.11 East  
City of Troy, Oakland County,  
Michigan

SHEET  
Notes and Details Plan



REVISIONS  
09-26-14 ISSUED FOR ENGINEERING REVIEW

DRAWN BY:  
J. Klenk  
DESIGNED BY:  
J. Longhurst  
APPROVED BY:  
J. Longhurst  
DATE:  
September 26, 2014  
SCALE: N.T.S.  
NFE JOB NO. SHEET NO.  
F731-02 C-6



## 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

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 800-252-6007
- 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 800-321-2327
- Ohio 800-362-2764
- Oklahoma 800-522-6543
- Pennsylvania 800-242-1776
- Tennessee 800-351-1111
- Texas 800-344-8377

### DIG SAFELY!

- ✓ Wait the required time
- ✓ Respect the marks
- ✓ Dig Safely



Know what's below.  
Call before you dig.

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 [stsdesignreviews@sunocoenergy.com](mailto:stsdesignreviews@sunocoenergy.com)

2. A driveway or roadway may cross the right-of-way and pipeline perpendicularity, 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') 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. Wells, 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.

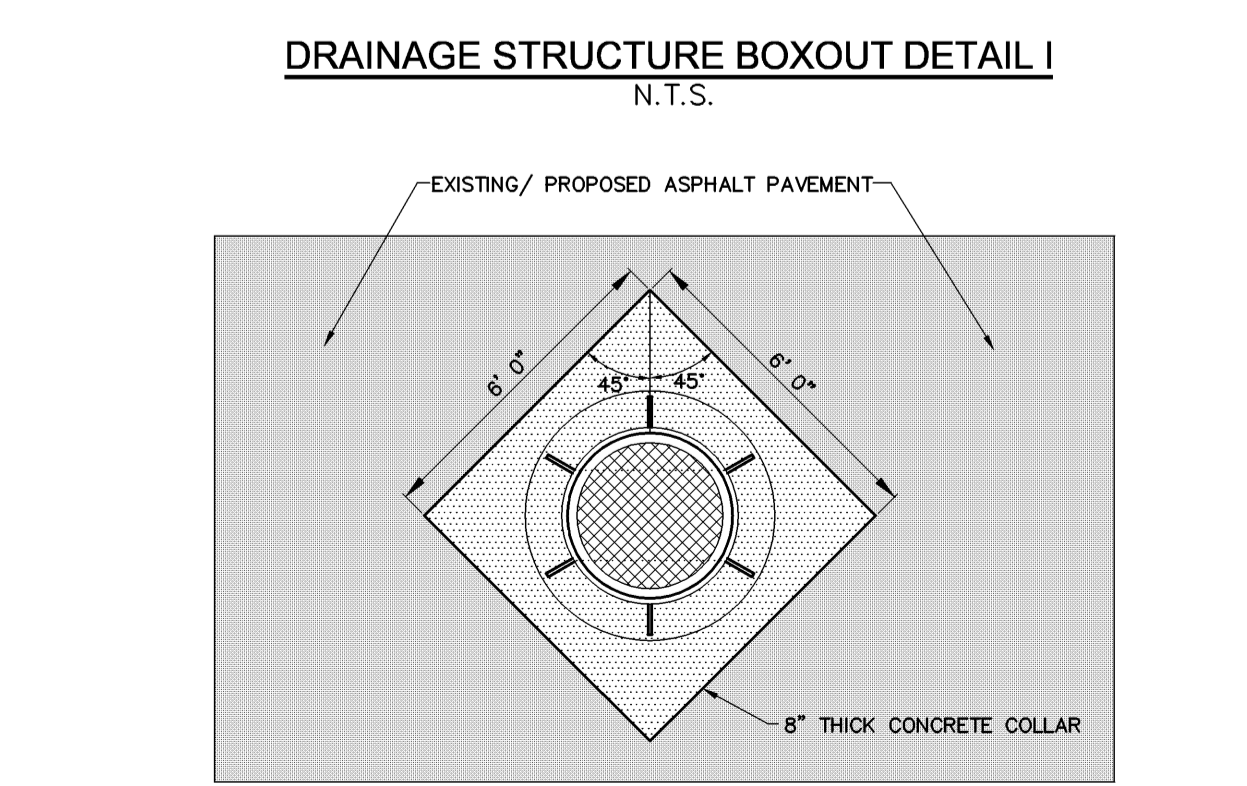
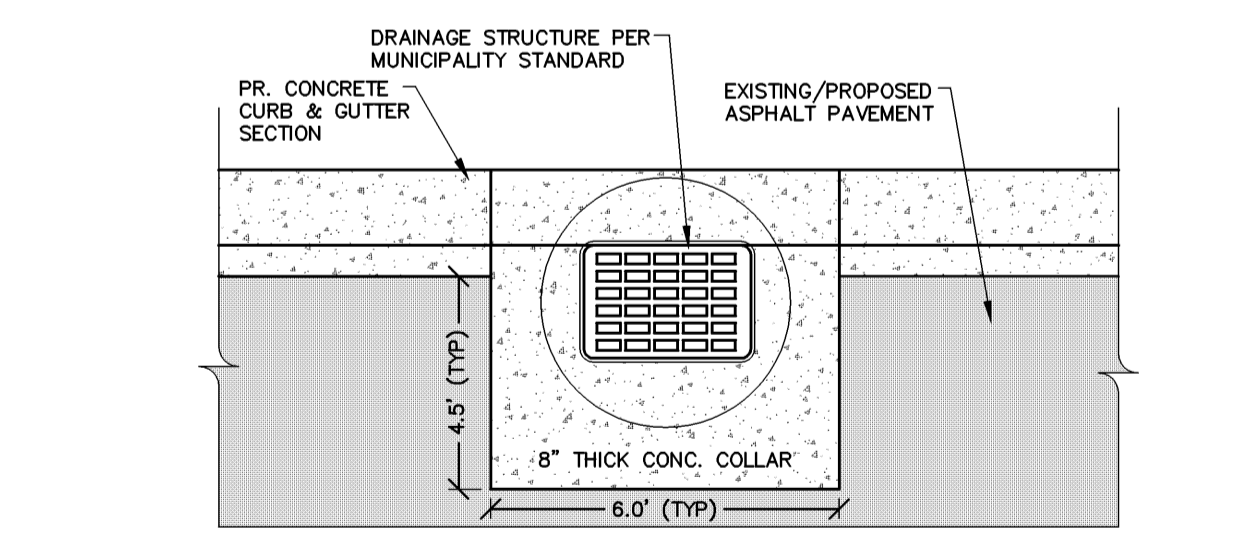
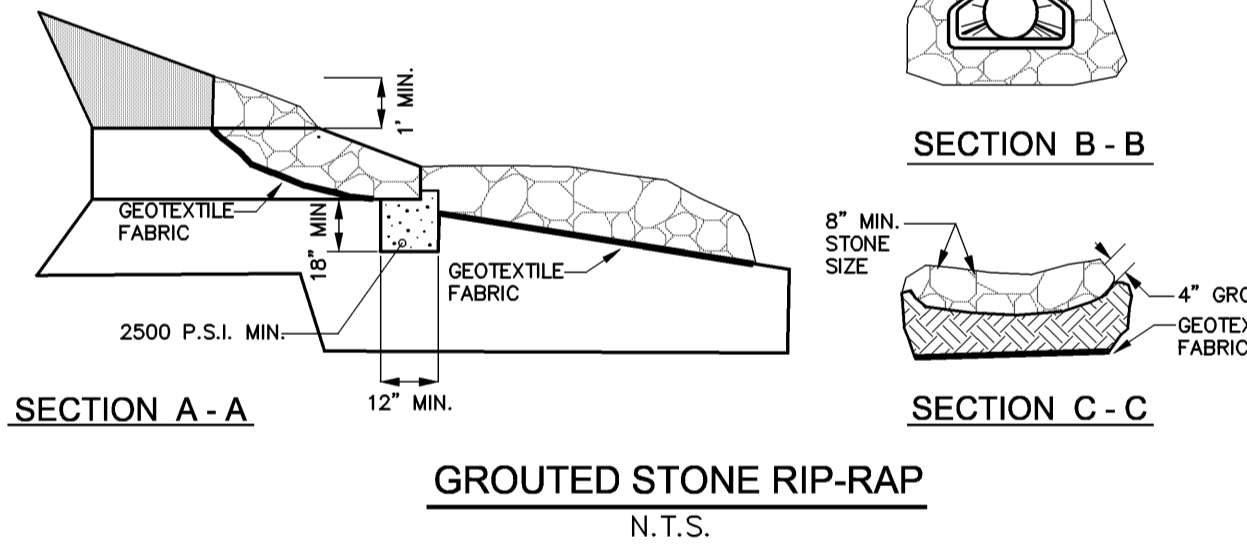
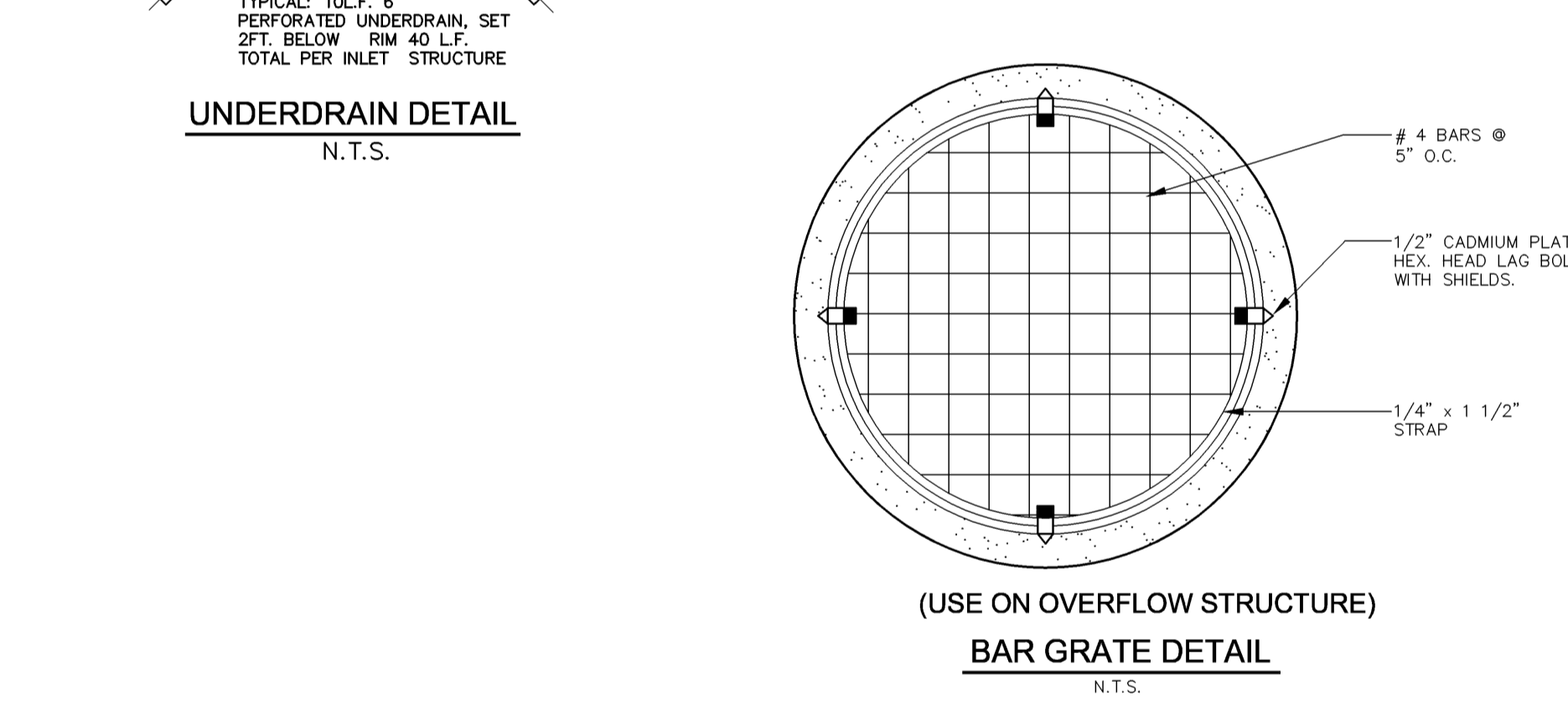
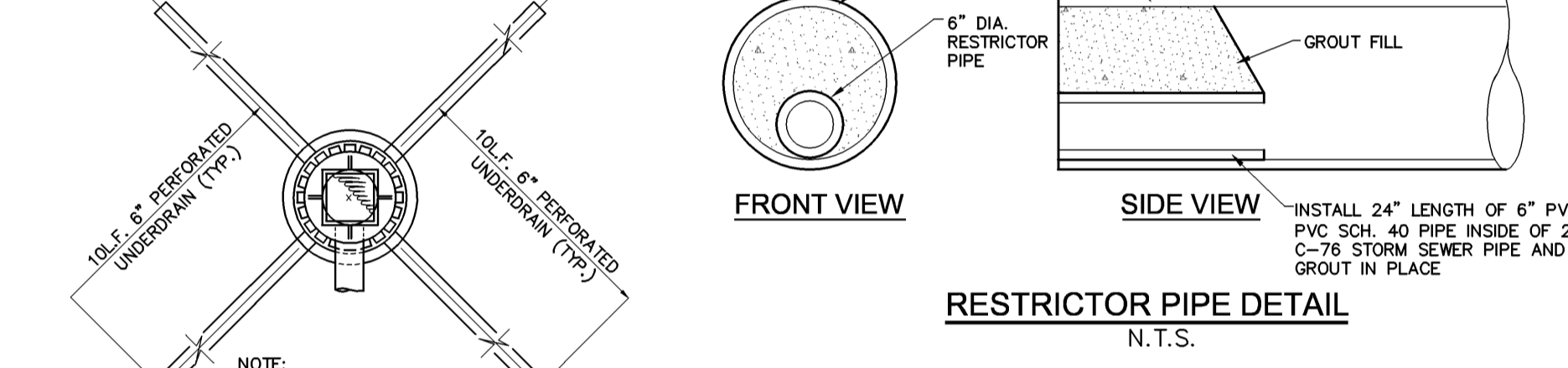
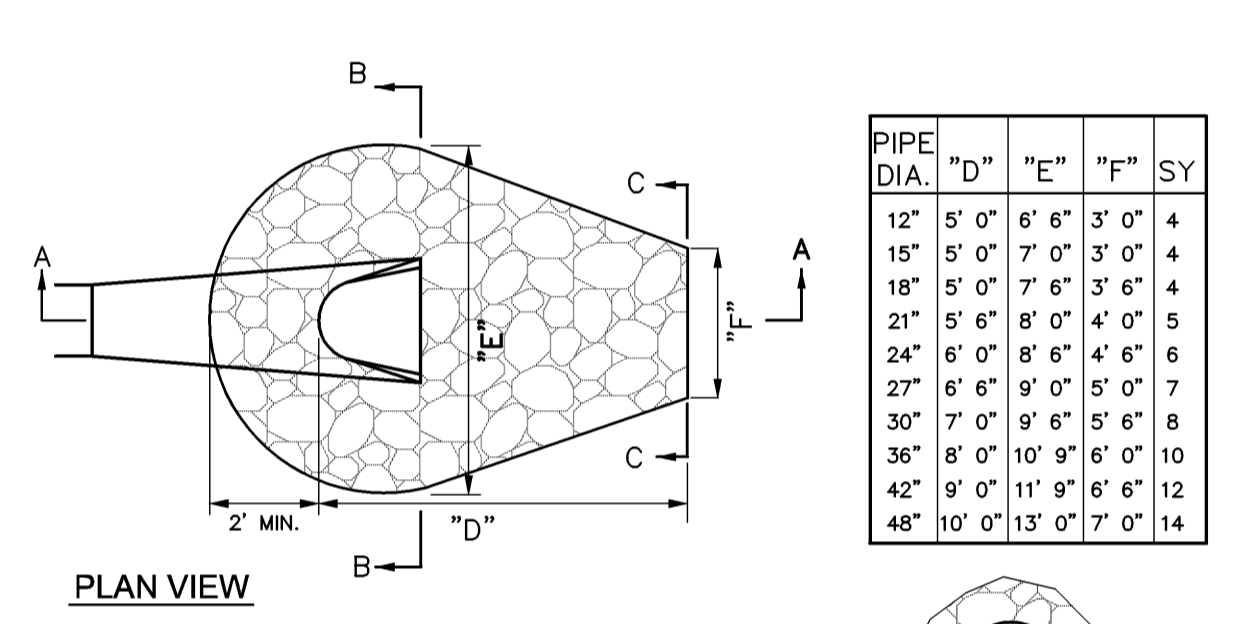
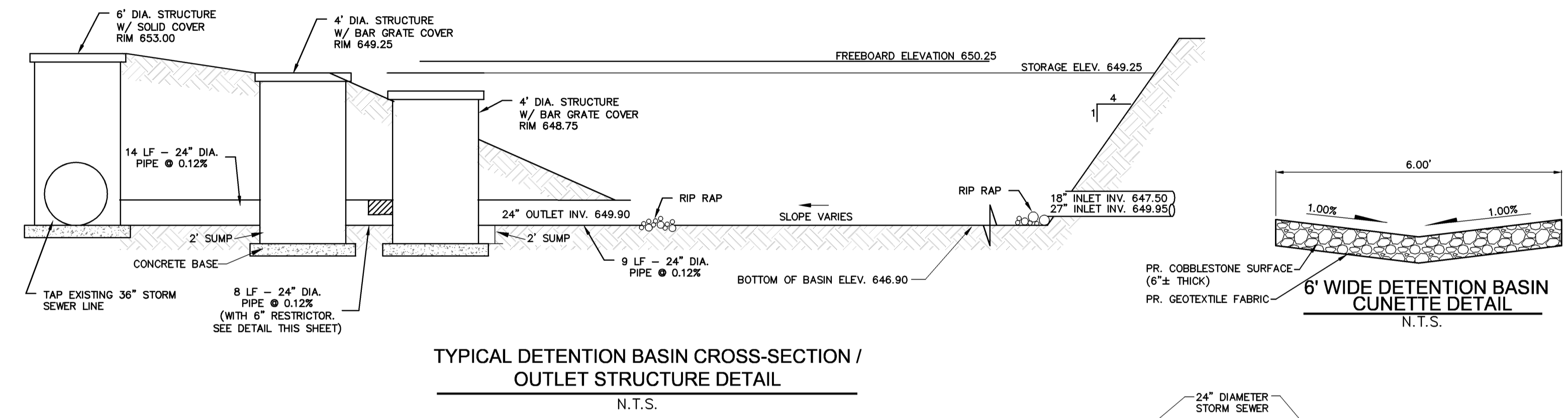
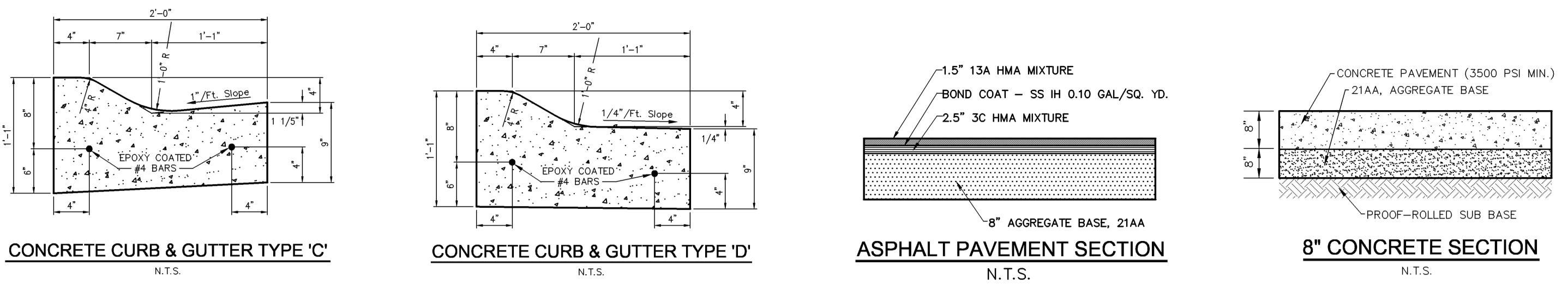
10. No blasting is permitted within 300 feet of the pipeline. Anything less than 300 feet must have written approval of and instruction from SPLP's Engineering Department.

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.).

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.   |
|--|--|
| MASSACHUSETTS<br>East Boston (617) 568-2249  | ARKANSAS, KENTUCKY, LOUISIANA, MICHIGAN, MISSISSIPPI, MISSOURI, OHIO, OKLAHOMA, TENNESSEE AND TEXAS  |
| MICHIGAN<br>Iakster (313) 292-8850   | OKLAHOMA<br>Dianthright (918) 352-5889<br>Enid (580) 242-6614<br>Mayville (405) 867-5675<br>Noble (405) 613-6888<br>Seminole (405) 382-7144  |
| NEW JERSEY<br>Trenton (609) 586-1522   | TEXAS<br>Mag Tex Line Center (281) 931-1021<br>Adine (950) 240-6753<br>Herbert (409) 722-8432<br>Longview (903) 297-1311<br>Sourlake (409) 387-5000  |
| NEW YORK<br>Big Flats (607) 862-8431<br>Caledonia (585) 338-6160   | Operating as Sunoco Pipeline<br>Fostoria (419) 435-3789<br>Toledo (419) 691-4554   |
| OHIO<br>Operating as Sunoco Pipeline<br>Fostoria (419) 435-3789<br>Toledo (419) 691-4554   | Operating as Inland Marine Corporation<br>Bradley Road (216) 214-5965<br>Cuyahoga (419) 176-8449<br>Lima (419) 619-2612  |
| PENNSYLVANIA<br>Altoona (814) 947-8300<br>Fort Millin (215) 365-8051<br>Greensburg (724) 834-2450<br>Jeandale (610) 942-1906<br>Reading/Monaca (610) 370-1250<br>Plymouth (570) 696-1277 | Sunoco Pipeline West Texas Gulf<br>Blum (254) 874-5219<br>Breckenridge (254) 599-7526<br>Childress (806) 492-2350<br>Colo. City (325) 728-3162<br>Comyn (254) 892-2405<br>Crosstexas (803) 872-2369<br>Hawley (325) 537-2598<br>Hearne (979) 280-5732<br>Longview (903) 295-9203<br>Merten (806) 665-8082<br>Nederland (409) 721-4403<br>Robert Lee (325) 453-4315<br>Snyder (325) 573-3502<br>Sourlake (409) 287-5000 |

For additional information regarding pipeline safety please visit our website at [www.sunocoenergy.com/Public-Awareness](http://www.sunocoenergy.com/Public-Awareness) or scan the below code with your smart phone.



### 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-5164.

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.

### 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 CHANGES 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 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 SHALL 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 TO BE REMOVED. 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 WIFE MAKE NO REPRESENTATIONS, WARRANTY OR GUARANTY AS TO THE LOCATION 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 IRRIGATION 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

IF 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 PREPARATION

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. TRENCH BACKFILL SHALL ALSO BE INSTALLED IN CONFORMANCE WITH THE PROJECT PLANS 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 CHANGE 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

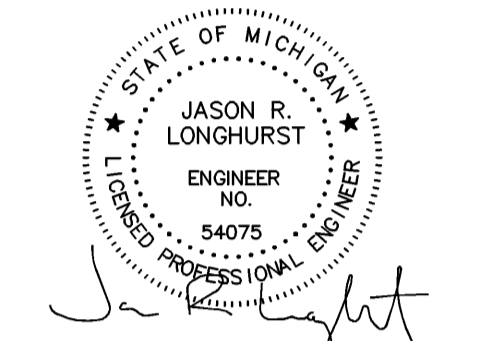
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHETHER THE SITE EARTHWORK BALANCES OR NOT. ANY EXCESS CUT MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR. IN A LIKE MANNER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT APPROVED FILL MATERIAL AND PLACE IT AS REQUIRED TO ATTAIN THE SITE 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.



SEAL



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 1/4  
of Section 26  
T.2 North, R.11 East  
City of Troy, Oakland County,  
Michigan

SHEET

Soil Erosion /  
Drainage Area Plan



REVISIONS

09-26-14 ISSUED FOR ENGINEERING REVIEW

DRAWN BY:

J. Klenk

DESIGNED BY:

J. Longhurst

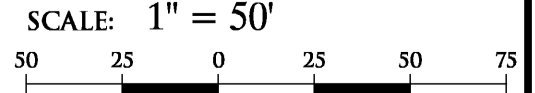
APPROVED BY:

J. Longhurst

DATE:

September 26, 2014

SCALE: 1" = 50'

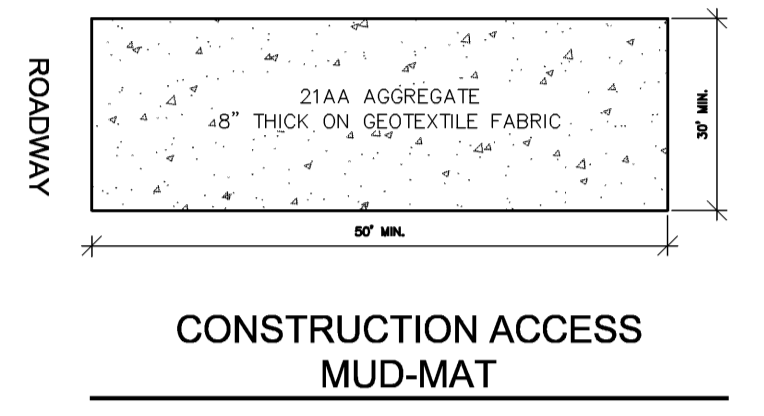
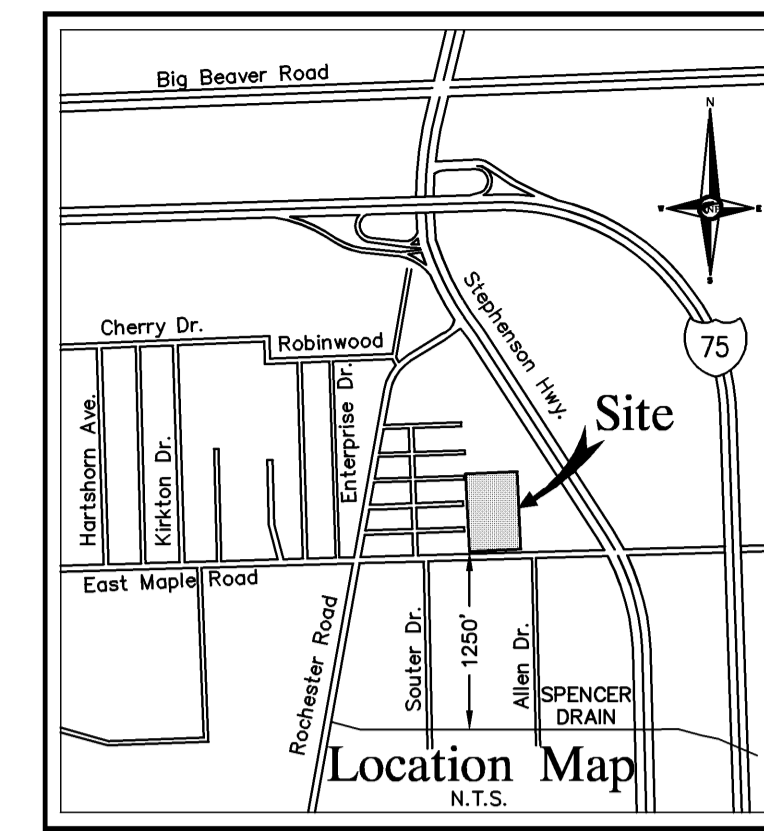


NFE JOB NO.

F731-02

SHEET NO.

C-7



**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 BEFORE 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 REMOVED 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 CHANGE HAS BEEN COMPLETED OR WHEN SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED.  
PERMANENT EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 (FIFTEEN) CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE 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.

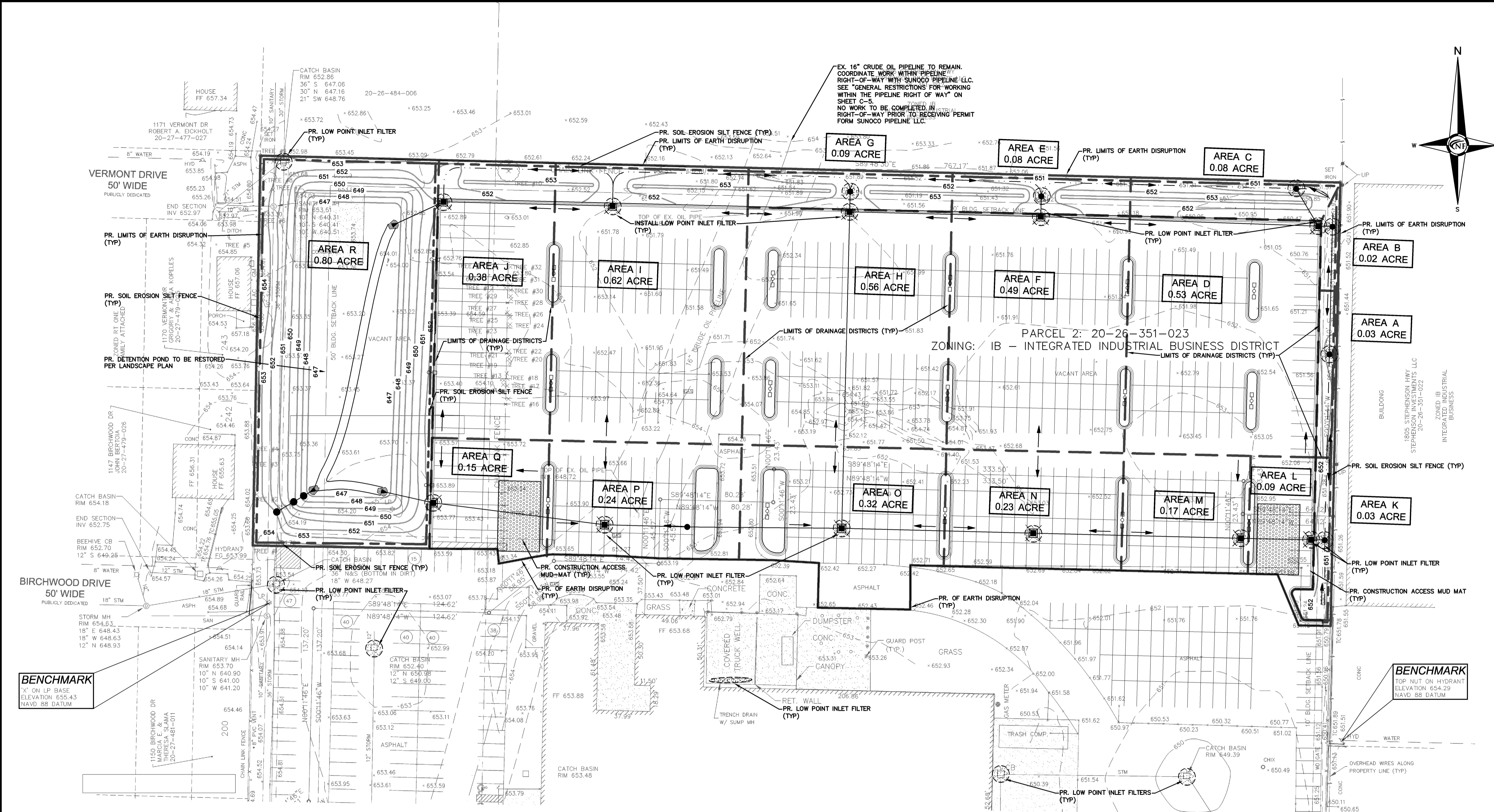
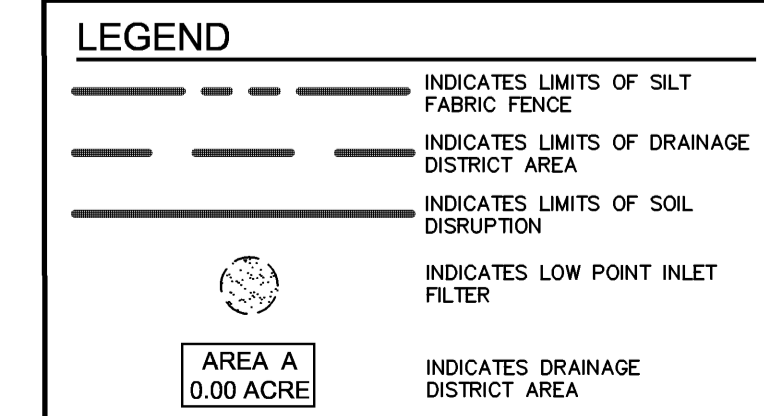
ALL GRADING PLANS AND SPECIFICATIONS, INCLUDING EXTENSIONS OF PREVIOUSLY APPROVED PLANS, SHALL INCLUDE PROVISIONS FOR EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH, BUT NOT LIMITED TO, THE STANDARDS CONTAINED IN THE "CITY OF TROY DEVELOPMENT / ENGINEERING STANDARDS".

**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% 5% URBAN LAND AND 4.2% 6% URBAN LAND-THEFTORD 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    | 1,750    | L.F.  |
| INLET FILTER           | 333      | EA.   |
| AGGREGATE ACCESS DRIVE |          | SY.   |

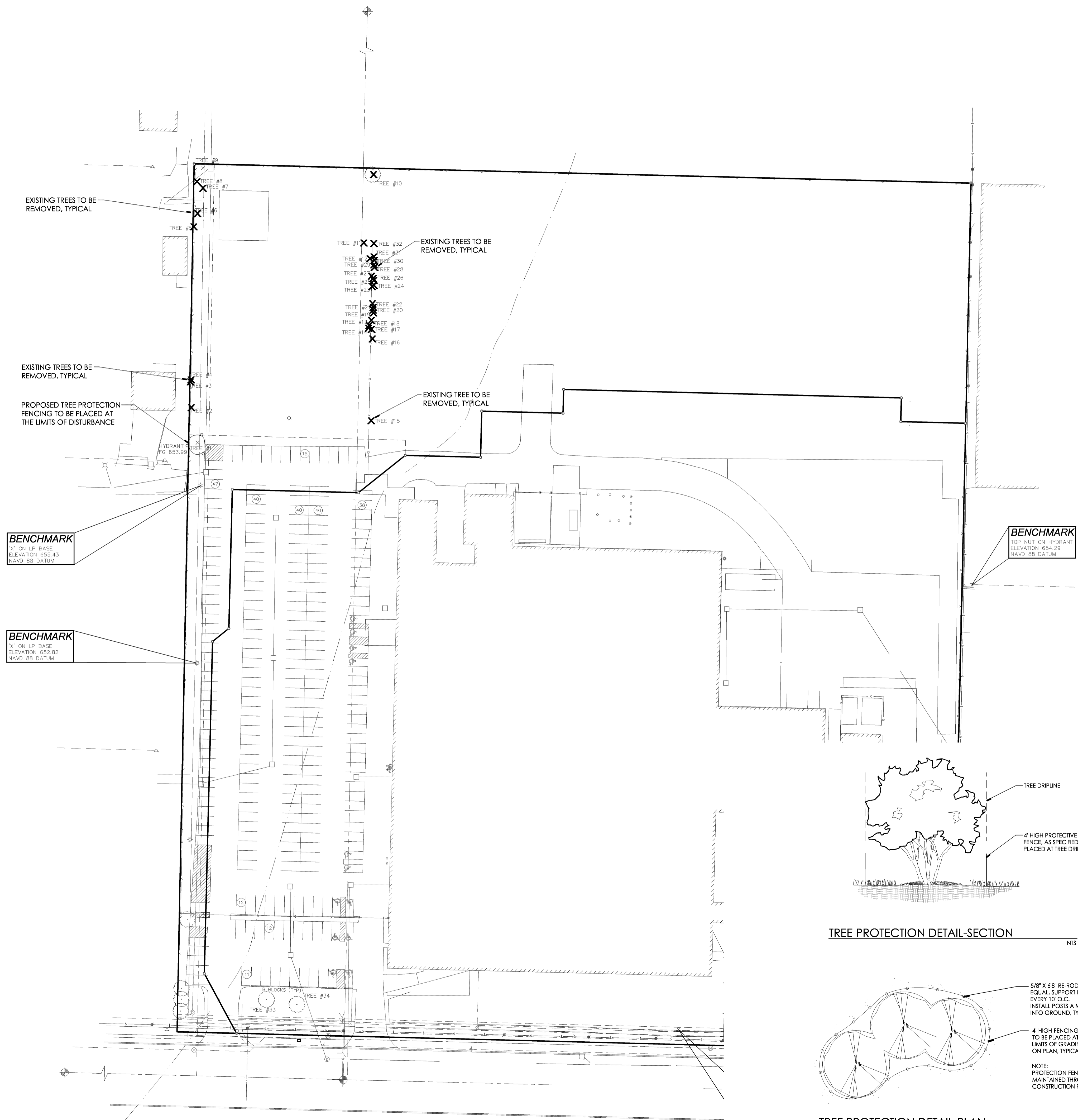
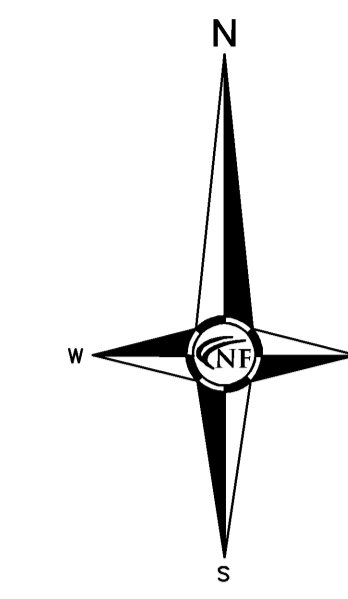
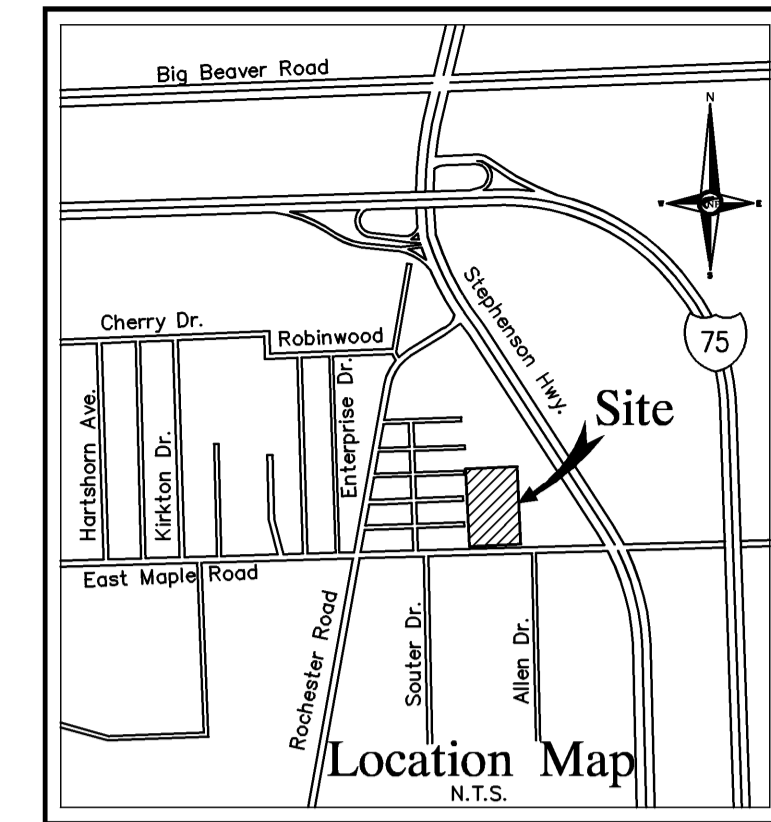


**LEGAL DESCRIPTION**  
PARCEL 1 (TAX ITEM NO. 20-26-351-024): PART OF THE SOUTHWEST 1/4 OF SECTION 26 AND A PART OF THE SOUTHWEST 1/4 OF SECTION 27, TOWN 2 NORTH, RANGE 11 EAST, CITY OF TROY, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE SOUTHEAST CORNER OF SECTION 27; THENCE NORTH 00 DEGREES 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 38 MINUTES 52 SECONDS WEST, A DISTANCE OF 67.03 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 327.77 FEET; THENCE NORTH 90 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 WEST, A DISTANCE OF 124.62 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 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 WEST, 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 WEST, A DISTANCE OF 333.50 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 84.12 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 1/4 OF SECTION 26 AND PART OF THE SOUTHWEST 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; THENCE NORTH 89 DEGREES 45 MINUTES 00 SECONDS WEST, A DISTANCE OF 106.51 FEET TO THE POINT OF BEGINNING; THENCE NORTH 29 DEGREES 38 MINUTES 52 SECONDS WEST, A DISTANCE OF 67.03 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 SECONDS EAST, A DISTANCE OF 327.77 FEET; THENCE NORTH 90 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 WEST, A DISTANCE OF 124.62 FEET; THENCE NORTH 00 DEGREES 11 MINUTES 46 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 WEST, 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 WEST, A DISTANCE OF 333.50 FEET; THENCE SOUTH 00 DEGREES 11 MINUTES 46 SECONDS WEST, A DISTANCE OF 84.12 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.







**GENERAL TREE PROTECTION NOTES**

- APPROVED TREE PROTECTION SHALL BE ERRECTED PRIOR TO THE START OF CONSTRUCTION ACTIVITIES, AND SHALL REMAIN IN PLACE UNTIL THE IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
- ALL UNDERSTORY VEGETATION WITHIN THE LIMITS OF PROTECTIVE FENCING SHALL BE PRESERVED.
- 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.
- WHERE GROUPINGS OF TREES ARE TO REMAIN, TREE FENCING SHALL BE PLACED AT THE LIMITS OF GRADING LINE.
- 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.
- SWALES SHALL BE ROUTED TO AVOID THE AREA WITHIN THE DRIP LINES OF PROTECTED TREES.
- TREES LOCATED ON ADJACENT PROPERTIES THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED.
- ROOT ZONES OF PROTECTED TREES SHOULD BE SURROUNDED WITH RIGIDLY STAKED FENCING.
- THE PARKING OF IDE AND RUNNING EQUIPMENT SHALL BE PROHIBITED UNDER THE DRIP LINE OF PROTECTED TREES.
- THE STRIPPING OF TOPSOIL FROM AROUND PROTECTED TREES SHALL BE PROHIBITED.
- ALL TREES TO BE REMOVED SHALL BE CUT AWAY FROM TREES TO REMAIN.
- THE GRUBBING OF UNDERSTORY VEGETATION WITHIN CONSTRUCTION AREAS SHOULD BE CLEARED BY CUTTING VEGETATION AT THE GROUND WITH A CHAINSAW OR MINIMALLY WITH A HYOBR-AE.
- THE CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT PER ORNANCE GUIDELINES, FOR THE DAMAGE OR REMOVAL OF ANY TREE DESIGNATED TO REMAIN.
- 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: | 31 |
| MINUS DEAD TREES:          | -2 |
| NET TREES TO BE REMOVED:   | 29 |

**TREE PROTECTION LEGEND**

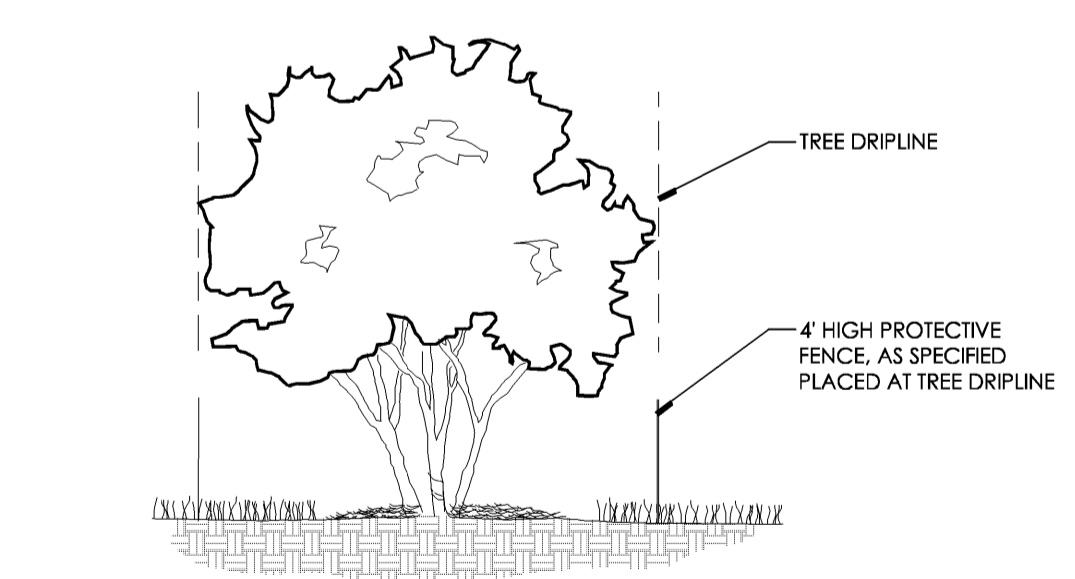
- #20 X EXISTING TREES TO REMAIN
- X#27 EXISTING TREES TO BE REMOVED
- PROPOSED TREE PROTECTION FENCING

**Tree Inventory List**

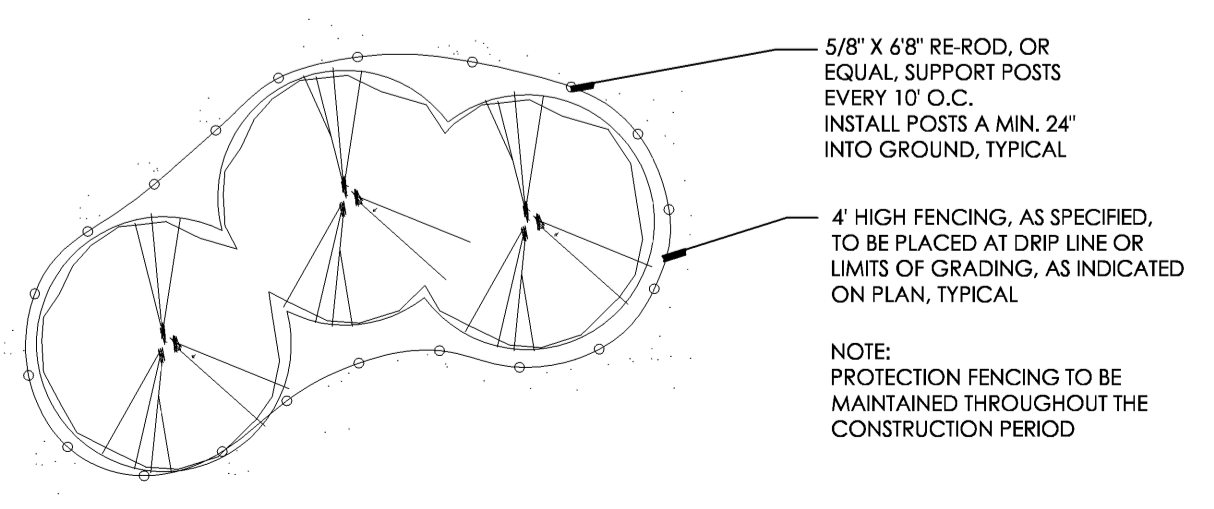
Client Name: Penske  
Job Location: 1225 E. Maple, Troy  
Date Completed: 9/3/2014

*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      |
| 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 | 19   | 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      |



TREE PROTECTION DETAIL-SECTION



TREE PROTECTION DETAIL-PLAN

SEAL

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 1/4  
of Section 26  
T.2 North, R.11 East  
City of Troy, Oakland County,  
Michigan

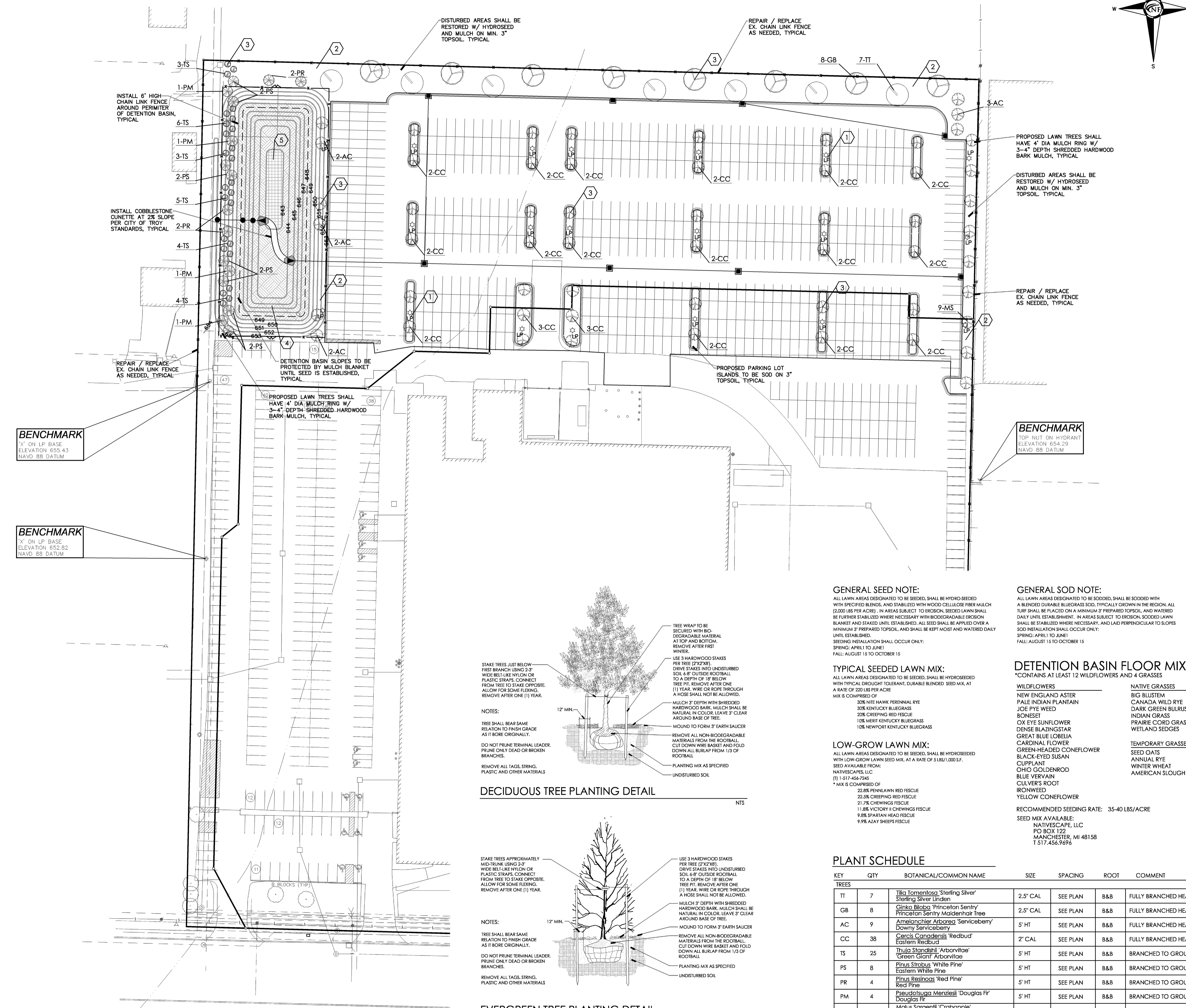
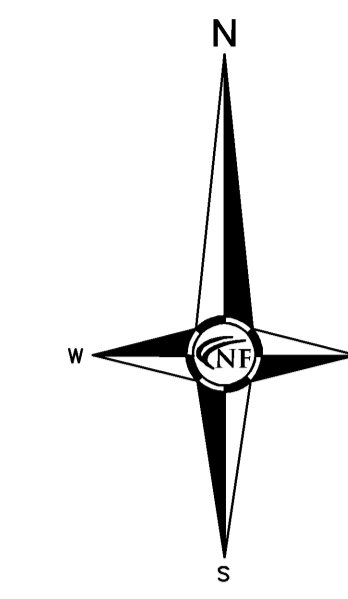
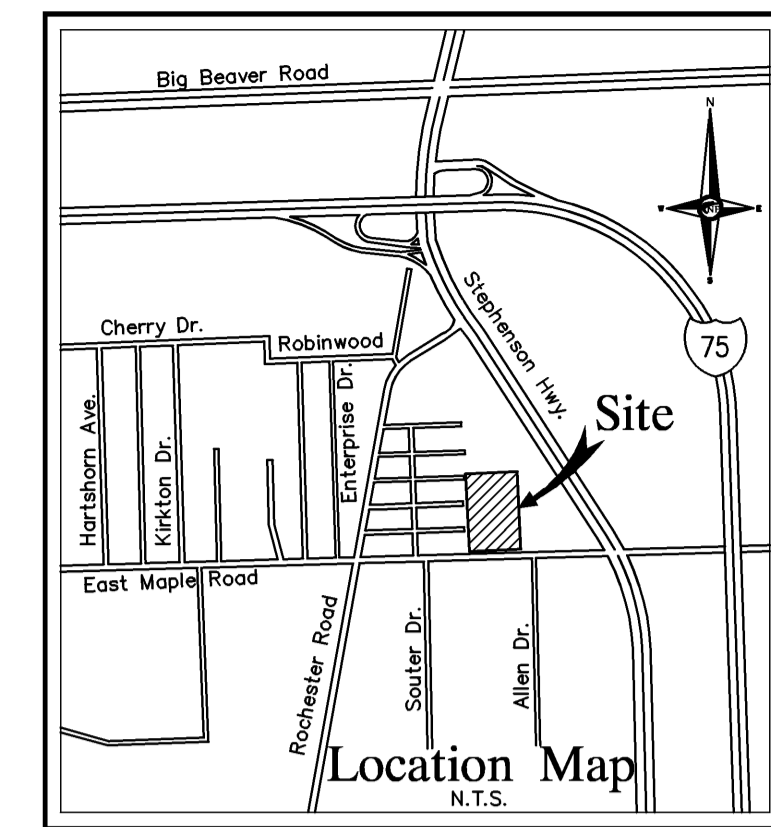
SHEET  
Tree Preservation Plan



REVISIONS  
09-15-2014 ISSUED FOR SITE PLAN REVIEW

DRAWN BY:  
J. Klenk  
DESIGNED BY:  
J. Longhurst  
APPROVED BY:  
J. Huhta  
DATE:  
September 15, 2014  
SCALE: 1" = 50'  
SHEET NO.  
F731-02 L-1





**BENCHMARK**  
"X" ON LP BASE  
ELEVATION 655.43  
NAVD 88 DATUM

**BENCHMARK**  
"X" ON LP BASE  
ELEVATION 652.92  
NAVD 88 DATUM

**GENERAL LANDSCAPE NOTES**

- LANDSCAPE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, THE PLAN SHALL GOVERN. QUANTITIES CONTRACTED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON-SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION OR REPAIR PHASE OF WORK. ANY DAMAGE OR INTERFERENCE OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES, AND SHALL REPORT ANY UNACCEPTABLE SITE CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT.
- PLANTS SHALL BE FULLY BRANCHED, AND IN HEALTHY VIGOROUS GROWING CONDITION.
- PLANTS SHALL BE WATERED BEFORE AND AFTER PLANTING IS COMPLETE.
- 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.
- ALL MATERIALS SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE AMERICAN STANDARDS FOR NURSERY STOCK.
- CONTRACTOR WILL SUPPLY FRESH GRADE AND DISCARD 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.
- PROVIDE CLEAN BACKFILL SOIL USING MATERIAL STOCKPILED ON-SITE. SOIL SHALL BE SCREENED AND FREE OF DEBRIS, FOREIGN MATERIAL, AND STONE. SLOW-RELEASE FERTILIZER SHALL BE ADDED TO THE PLANT BEDS BEFORE BEING BACKFILLED. APPLICATION SHALL BE AT THE MANUFACTURER'S RECOMMENDED RATES.
- AMENDED PLANT MIX (PREPARED TOPSOIL) SHALL CONSIST OF 1/3 SCREENED TOPSOIL, 1/3 SAND, AND 1/3 "TWO" (20") COMPOST. MIXED WELL AND SPREAD TO A DEPTH AS INDICATED IN PLANTING DETAILS.
- 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 PICES ON INCONSISTENT SIZE.
- NO SUBSTITUTION OR CHANGES OF LOCATION OR PLANT TYPE SHALL BE MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN MATERIALS AND FIELD CONDITIONS PRIOR TO COMMENCEMENT OF PLANTING.
- THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIALS IN A HEALTHY CONDITION THROUGHOUT THE PERIOD OF THE CONTRACT.
- THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE SHALL HAVE THE RIGHT TO REJECT ANY MATERIAL THAT DOES NOT MEET THE REQUIREMENTS OF THE PLANS AND/OR SPECIFICATIONS.
- LANDSCAPE CONTRACTOR SHALL STAKE AND MULCH ON SOD (AS INDICATED ON PLANS) ALL AREAS DESIGNATED AS SUCH ON THE PLANS, THROUGHOUT THE CONTRACT PERIOD. FURTHER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING AREAS DISTURBED DURING CONSTRUCTION, NOT IN THE CONTRACT LIMITS, TO EQUAL OR GREATER CONDITION.
- ALL LANDSCAPE AREAS SHALL HAVE PROPER DRAINAGE THAT PREVENTS EXCESSIVE WATER FROM PONDING ON LAWN AREAS OR AROUND TREES AND SHRUBS. ALL LANDSCAPE AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC, UNDERGROUND SYSTEM.

**GENERAL SEED NOTE:**

ALL LAWN AREAS DESIGNATED TO BE SEED, SHALL BE HYDRO SEEDED WITH SPECIFIED BLENDS, AND STABILIZED WITH WOOD CELLULOSE FIBER MULCH (2000 LBS PER ACRE). IN AREAS SUBJECT TO EROSION, SEEDED LAWN SHALL BE FURTHER STABILIZED WHERE NECESSARY WITH BIODEGRADABLE EROSION BLANKET AND STAKES 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: APRIL 15 TO JUNE 1  
FALL: AUGUST 15 TO OCTOBER 15

**TYPICAL SEEDED LAWN MIX:**

ALL LAWN AREAS DESIGNATED TO BE SEED, SHALL BE HYDROSEEDED WITH TYPICAL DROUGHT TOLERANT, DURABLE BLENDED SEED MIX AT A RATE OF 200 LBS PER ACRE.  
MIX IS COMPOSED OF:  
20% KENTUCKY BLUEGRASS  
20% CREEPING RED FESCUE  
10% NEWPORT KENTUCKY BLUEGRASS

**LOW-GROW LAWN MIX:**

ALL LAWN AREAS DESIGNATED TO BE SEED, SHALL BE HYDROSEEDED WITH LOW-GROW LAWN SEED MIX, AT A RATE OF 3 LBS/1,000 S.F.  
SEED AVAILABLE FROM:  
NATIVECAPES, LLC  
(71) 1-517-456-7245  
\*MIX IS COMPOSED OF:  
22.8% PENNSYLVANIA RED FESCUE  
22.8% CREEPING RED FESCUE  
27.7% CHEWINGS FESCUE  
11.8% VICTORY II CHEWINGS FESCUE  
9.8% SPARTAN HEAD FESCUE  
9.9% ALLEY 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 ESTABLISHED. IN AREAS SUBJECT TO EROSION, SODDED LAWN SHALL BE STABILIZED WHERE NECESSARY, AND LAD PERPENDICULAR TO SLOPES. SOD INSTALLATION SHALL OCCUR ONLY:  
SPRING: APRIL 15 TO JUNE 1  
FALL: AUGUST 15 TO OCTOBER 15

**DETENTION BASIN FLOOR MIX**

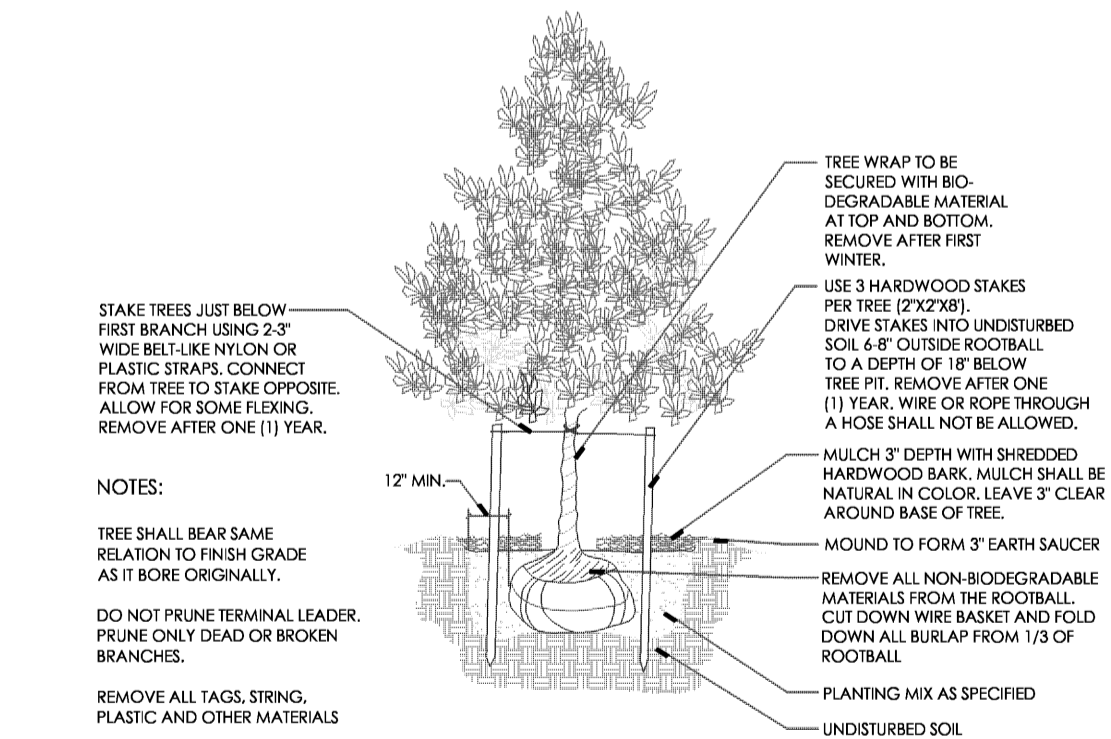
\*CONTAINS AT LEAST 12 WILDFLOWERS AND 4 GRASSES

- |                         |                          |
|-------------------------|--------------------------|
| <b>WILDFLOWERS</b>      | <b>NATIVE GRASSES</b>    |
| NEW ENGLAND ASTER       | BIG BLUESTEM             |
| PALE INDIAN PLANTAIN    | CANADA WILD RYE          |
| JOE PYE WEED            | DARK GREEN BULLRUSH      |
| BONSET                  | INDIAN GRASS             |
| OX EYE SUNFLOWER        | PRAIRIE CORD GRASS       |
| DENSE BLAZINGSTAR       | WETLAND SEDGES           |
| GREAT BLUE LOBELIA      |                          |
| CARDINAL FLOWER         | <b>TEMPORARY GRASSES</b> |
| GREEN-HEADED CONEFLOWER | SEED OATS                |
| BLACK-FIED SUSAN        | ANNUAL RYE               |
| CLIFFPLANT              | WINTER WHEAT             |
| OHIO GOLDENROD          | AMERICAN SLOUGH GRASS    |
| BLUE VERVAIN            |                          |
| CLIVER'S ROOT           |                          |
| IRONWEED                |                          |
| YELLOW CONEFLOWER       |                          |

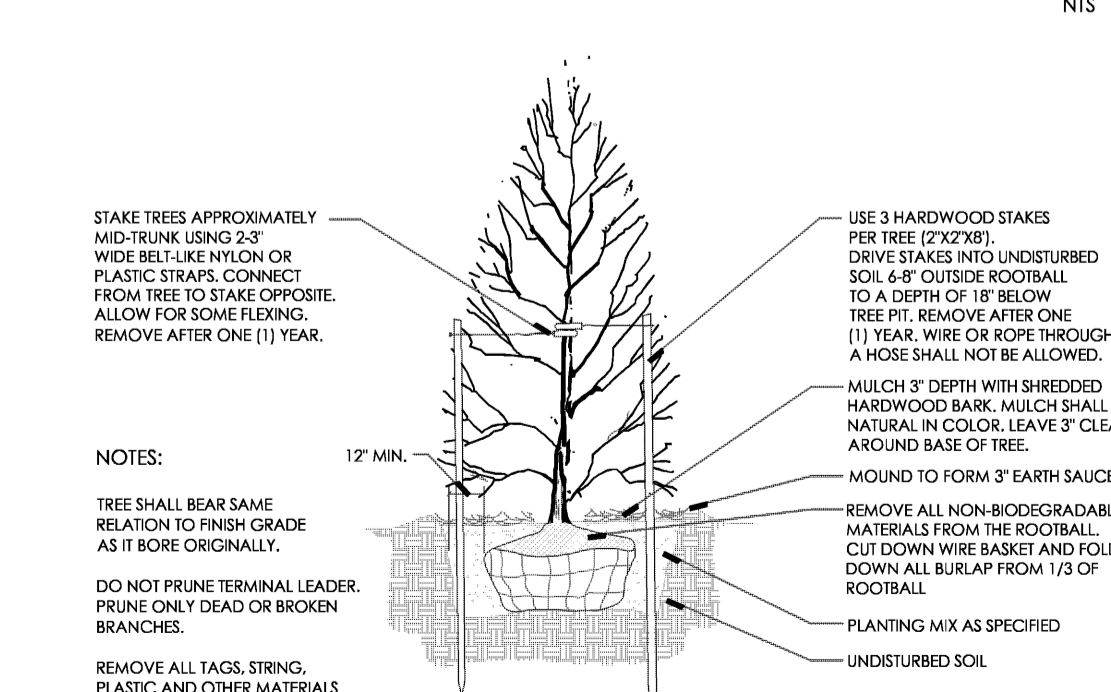
RECOMMENDED SEEDING RATE: 35-40 LBS/ACRE  
SEED MIX AVAILABLE:  
NATIVECAPE, LLC  
PO BOX 122  
MANCHESTER, MI 48158  
1-517-456-7696

**PLANT SCHEDULE**

| KEY   | QTY | BOTANICAL/COMMON NAME                   | SIZE     | SPACING  | ROOT | COMMENT              |
|-------|-----|---|----------|----------|------|----------------------|
| TREES |     |   |          |          |      |                      |
| TS    | 7   | Tilia Tomentosa 'Stirling Silver'       | 2.5' CAL | SEE PLAN | B&B  | FULLY BRANCHED HEADS |
| GB    | 8   | Pinus strobus 'Princeton Sentry'        | 2.5' CAL | SEE PLAN | B&B  | FULLY BRANCHED HEADS |
| AC    | 9   | Ampelglauber Arborescens 'Serviceberry' | 5' HT    | SEE PLAN | B&B  | FULLY BRANCHED HEADS |
| CC    | 38  | Cercis canadensis 'Redbud'              | 2' CAL   | SEE PLAN | B&B  | FULLY BRANCHED HEADS |
| TS    | 25  | Thuja Standishii 'Arborvitae'           | 5' HT    | SEE PLAN | B&B  | BRANCHED TO GROUND   |
| PS    | 8   | Pinus strobus 'White Pine'              | 5' HT    | SEE PLAN | B&B  | BRANCHED TO GROUND   |
| PR    | 4   | Pinus resinosa 'Red Pine'               | 5' HT    | SEE PLAN | B&B  | BRANCHED TO GROUND   |
| PM    | 4   | Pseudotsuga Menziesii 'Douglas Fir'     | 5' HT    | SEE PLAN | B&B  | BRANCHED TO GROUND   |
| MS    | 9   | Malus Sargentii 'Crispapple'            | 2' CAL   | SEE PLAN | B&B  | FULLY BRANCHED HEADS |



**DECIDUOUS TREE PLANTING DETAIL**



**EVERGREEN TREE PLANTING DETAIL**

SEAL

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 1/4  
of Section 26  
T.2 North, R.11 East  
City of Troy, Oakland County,  
Michigan

SHEET  
Landscape Plan

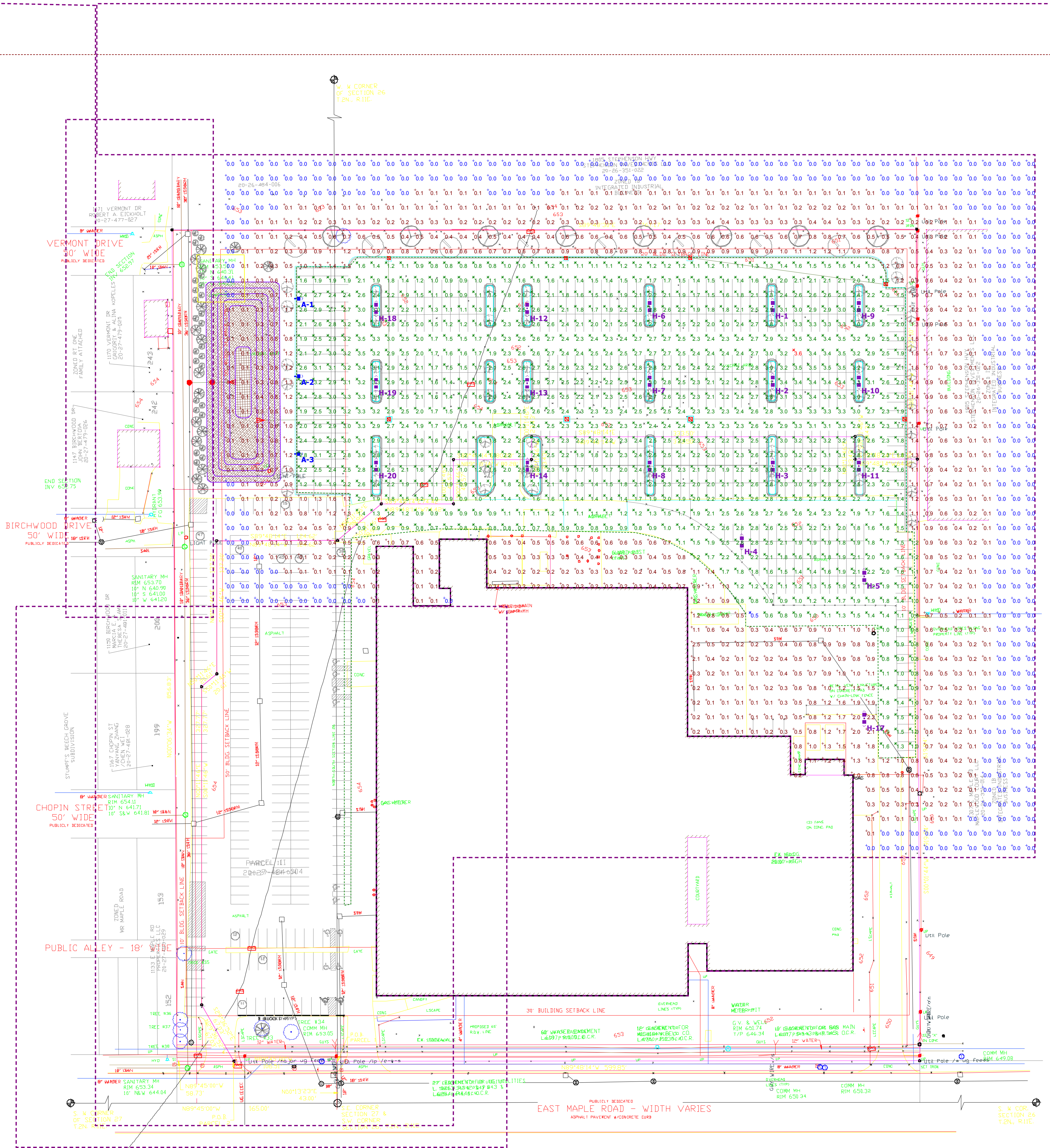


REVISIONS  
09-15-2014 ISSUED FOR SITE PLAN REVIEW

DRAWN BY:  
J. Klenk  
DESIGNED BY:  
J. Longhurst  
APPROVED BY:  
J. Huhta  
DATE:  
September 15, 2014

SCALE: 1" = 50'  
50 25 0 25 50 75  
NFE JOB NO. SHEET NO.  
**F731-02 L-2**





Plan View  
 Scale - 1" = 60'

| Symbol      | Label | Quantity | Manufacturer      | Catalog Number                   | Description   | Lamp | Number of Lamps | Filename                             | Lumens Per Lamp | Light Loss Factor | Wattage |
|-------------|-------|----------|-------------------|----------------------------------|---|------|-----------------|--------------------------------------|-----------------|-------------------|---------|
| ⬆<br>□<br>⬆ | A     | 3        | Lithonia Lighting | DSX0 LED 40C 1000 50K TFTM MVOLT | DSX0 LED WITH (2) 20 LED LIGHT ENGINE, TYPE TFTM OPTIC, 5000K, @ 1000mA | LED  | 1               | DSX0_LED_40C_1000_50K_TFTM_MVOLT.ies | 12950.47        | 0.95              | 138     |
| ⬆<br>□<br>⬆ | H     | 18       | Lithonia Lighting | DSX0 LED 40C 1000 50K T5W MVOLT  | DSX0 LED WITH (2) 20 LED LIGHT ENGINE, TYPE T5W OPTIC, 5000K, @ 1000mA  | LED  | 1               | DSX0_LED_40C_1000_50K_T5W_MVOLT.ies  | 13578.48        | 0.95              | 276     |

Statistics

| Description  | Symbol | Avg    | Max    | Min    | Avg/Max | Max/Min | Avg/Min |
|--------------|--------|--------|--------|--------|---------|---------|---------|
| Calc Zone #1 | +      | 1.1 fc | 3.6 fc | 0.0 fc | 0.3:1   | N/A     | N/A     |
| Parking      | ✕      | 2.1 fc | 3.6 fc | 0.5 fc | 0.6:1   | 7.2:1   | 4.2:1   |

Luminaire Locations

| No. | Label | Location |        |        |        | Aim         |      |        |        |        |
|-----|-------|----------|--------|--------|--------|-------------|------|--------|--------|--------|
|     |       | X        | Y      | Z      | MH     | Orientation | Tilt | X      | Y      | Z      |
| 1   | A     | 5047.6   | 5793.4 | 682.79 | 25.00  | 90.00       | 0.00 | 5048.8 | 5793.4 | 657.79 |
| 2   | A     | 5047.6   | 5713.4 | 682.79 | 25.00  | 90.00       | 0.00 | 5048.8 | 5713.4 | 657.79 |
| 3   | A     | 5047.6   | 5633.4 | 682.79 | 25.00  | 90.00       | 0.00 | 5048.8 | 5633.4 | 657.79 |
| 1   | H     | 5539.7   | 5785.4 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 2   | H     | 5539.7   | 5708.4 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 3   | H     | 5539.7   | 5620.7 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 4   | H     | 5507.8   | 5542.7 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 5   | H     | 5634.0   | 5507.2 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 6   | H     | 5413.0   | 5785.4 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 7   | H     | 5413.0   | 5708.4 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 8   | H     | 5413.0   | 5620.7 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 9   | H     | 5628.6   | 5785.4 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 10  | H     | 5628.6   | 5708.4 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 11  | H     | 5628.6   | 5620.7 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 12  | H     | 5286.9   | 5783.1 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 13  | H     | 5286.9   | 5706.1 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 14  | H     | 5287.0   | 5620.7 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 17  | H     | 5634.0   | 5360.7 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 18  | H     | 5131.1   | 5783.1 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 19  | H     | 5131.1   | 5706.1 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |
| 20  | H     | 5131.1   | 5620.7 | 0      | 682.79 | 25.00       | 0.00 |        |        |        |

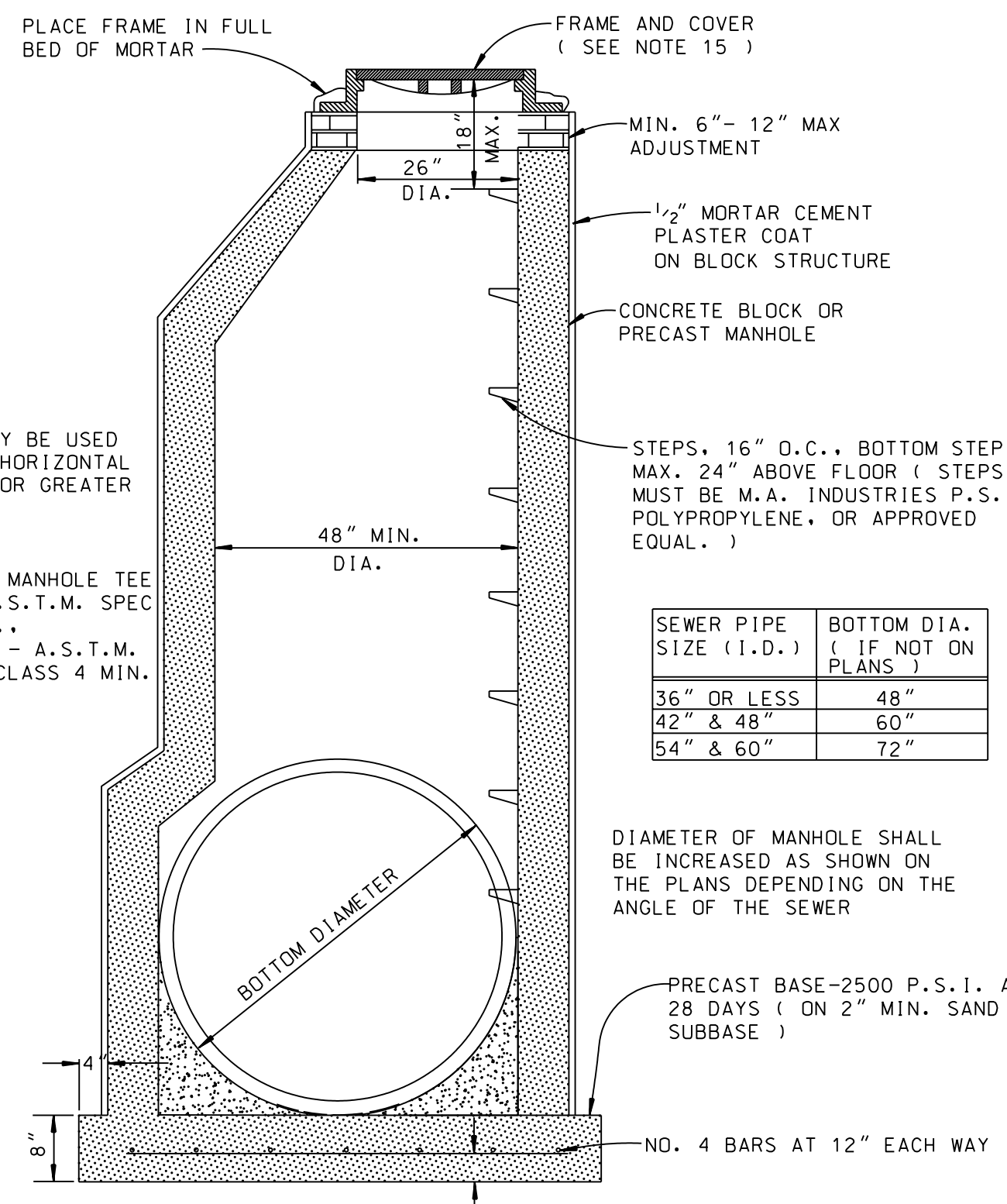
- Note**
1. Readings are shown in units of maintained footcandles.
  2. Total Light Loss Factor (LLF) = .95 LLF for LED
  3. Test Plane = 0' AFF
  4. Fixture Mounting Height = 25' AFF for pole-mount
  5. Fixture Spacing = See Plan view.
  6. This photometric layout was calculated using specific criteria. Any deviation from stated parameters will affect actual performance.
  7. These lighting calculations are not a substitute for independent engineering analysis of lighting system suitability and safety.

**Disclaimer**  
 This lighting design is not a professional engineering drawing and is provided for informational purposes only, without warranty as to accuracy, completeness, reliability or otherwise. Acuity Brands Lighting is not responsible for specifying the lighting or illumination requirements for any specific project. It is the obligation of the end-user to consult with a professional engineering advisor to determine whether this lighting design meets the applicable project requirements for lighting system performance, safety, suitability and effectiveness for use in a particular application. End-user environment and application (including, but not limited to, voltage variation and dirt accumulation) can cause actual field performance to differ from the calculated photometric performance represented in this lighting design. In no event will Acuity Brands Lighting be responsible for any less resulting from any use of this lighting design.

Penske - Troy, MI

Designer  
 Kirk Frazier  
 Date  
 9/15/2014  
 Scale  
 Not to Scale  
 Drawing No.  
 44701614A2  
 Summary





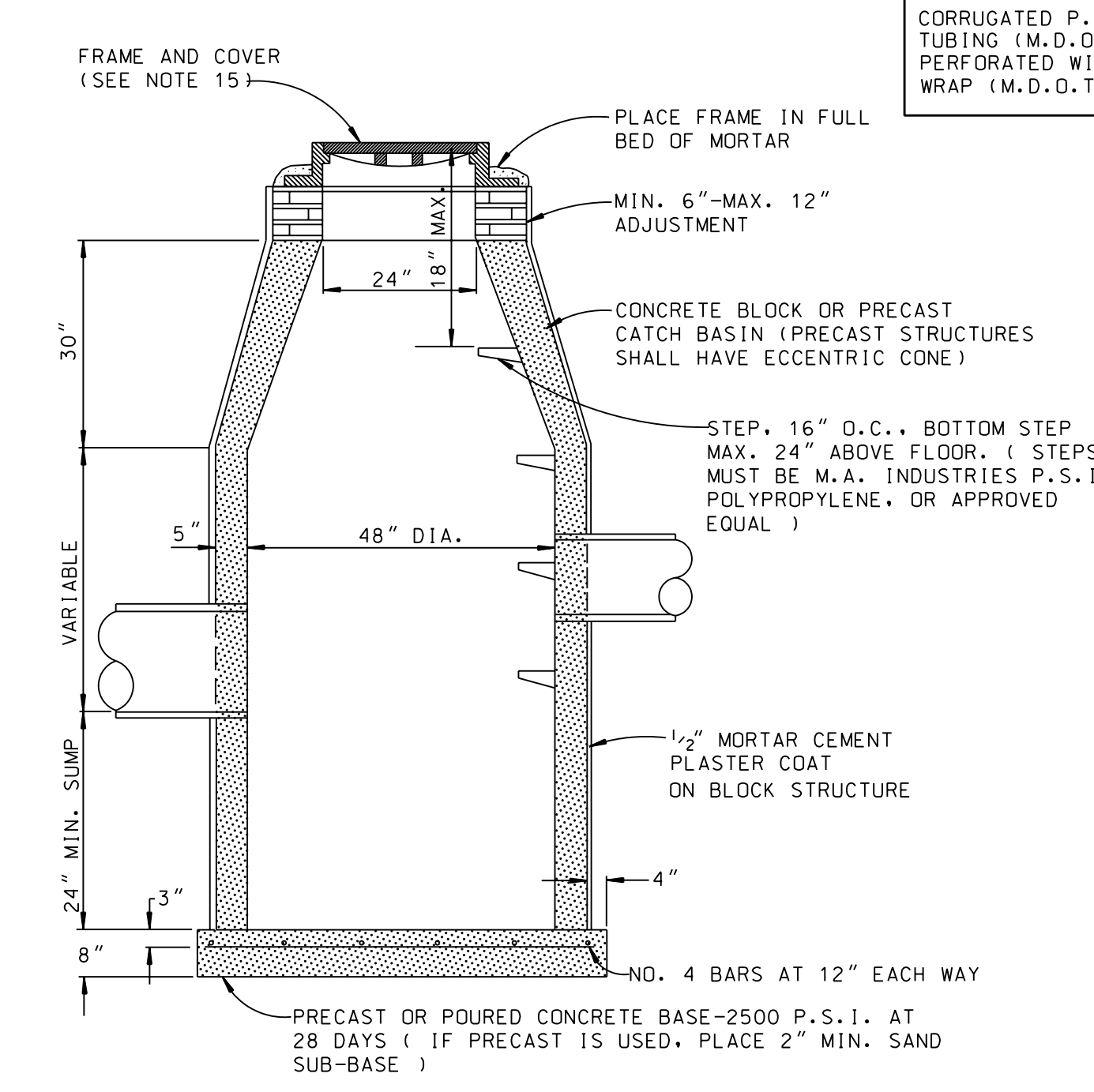
MANHOLE TEES MAY BE USED WHEN PIPE DIA. HORIZONTAL MEASURE IS 48" OR GREATER

INTEGRALLY CAST MANHOLE TEE CIRCULAR PIPE - A.S.T.M. SPEC C76 CLASS 4 MIN. ELLIPTICAL PIPE - A.S.T.M. SPEC. C 507 HE CLASS 4 MIN.

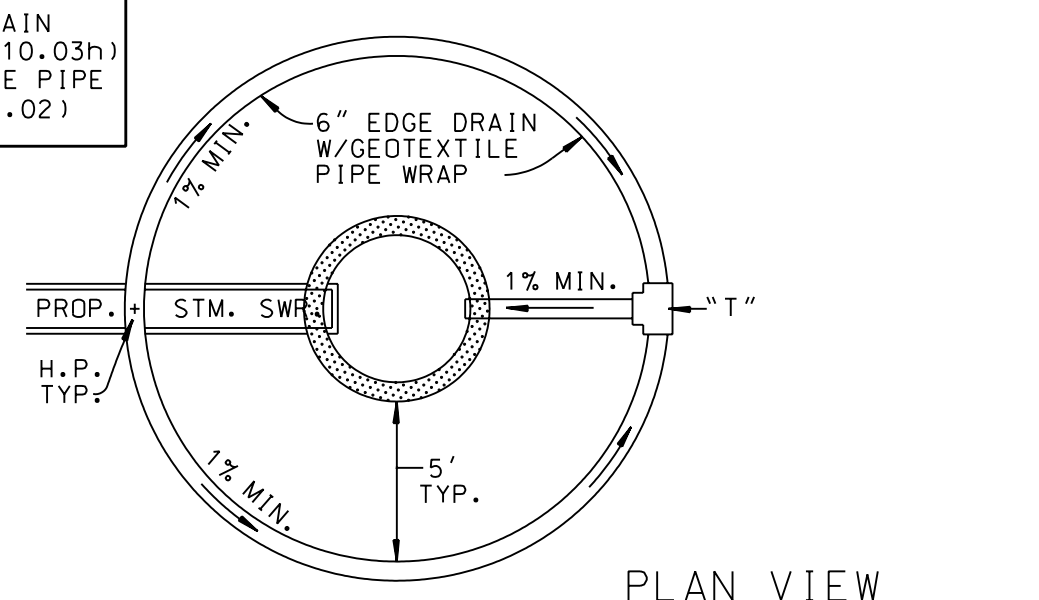
| SEWER PIPE SIZE (I.D.) | BOTTOM DIA. (IF NOT ON PLANS) |
|------------------------|-------------------------------|
| 36" OR LESS            | 48"                           |
| 42" & 48"              | 60"                           |
| 54" & 60"              | 72"                           |

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

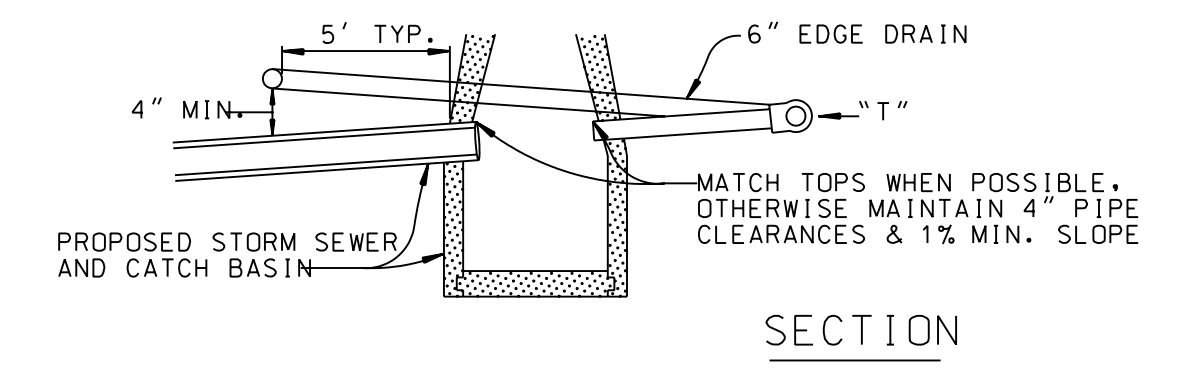
**STORM SEWER MANHOLE A**



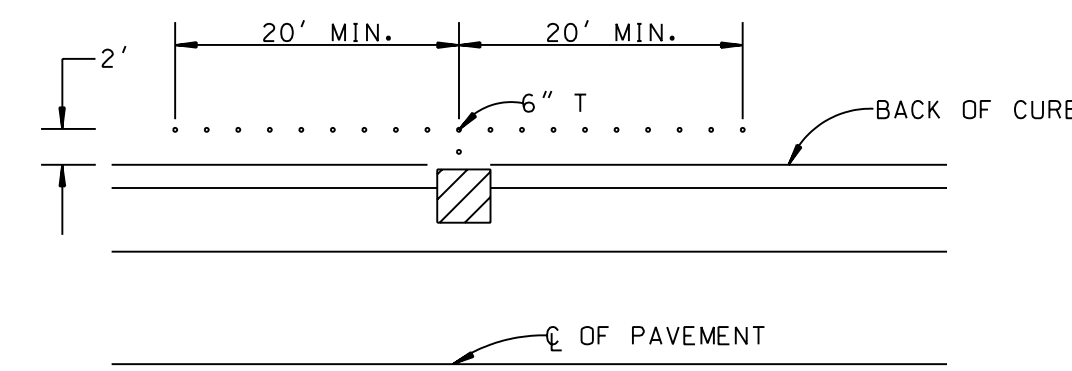
**4 FT. DIAMETER CATCH BASIN**



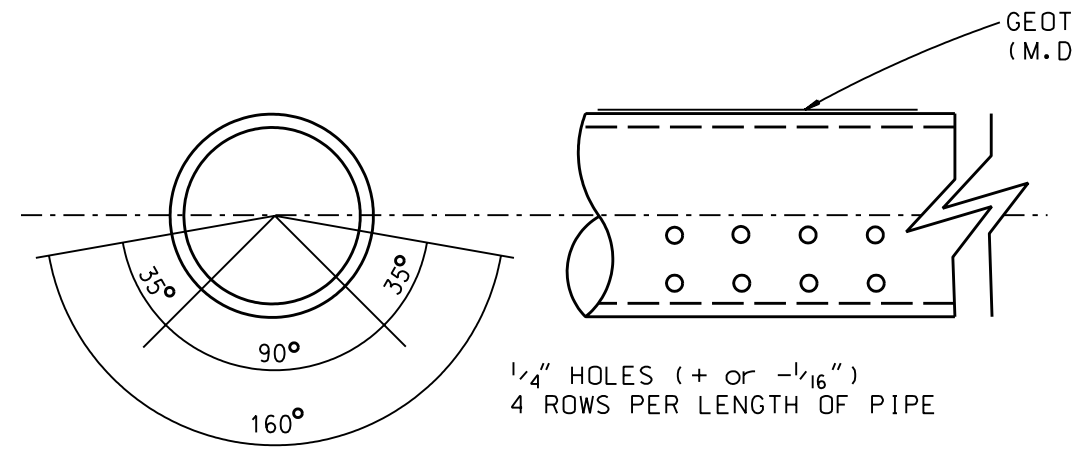
**PLAN VIEW**



**CATCH BASIN EDGE DRAIN DETAIL**



**UNDERDRAIN DETAIL FOR CATCH BASIN IN CURB FOR PAVEMENT WITHIN THE CITY R.O.W.**

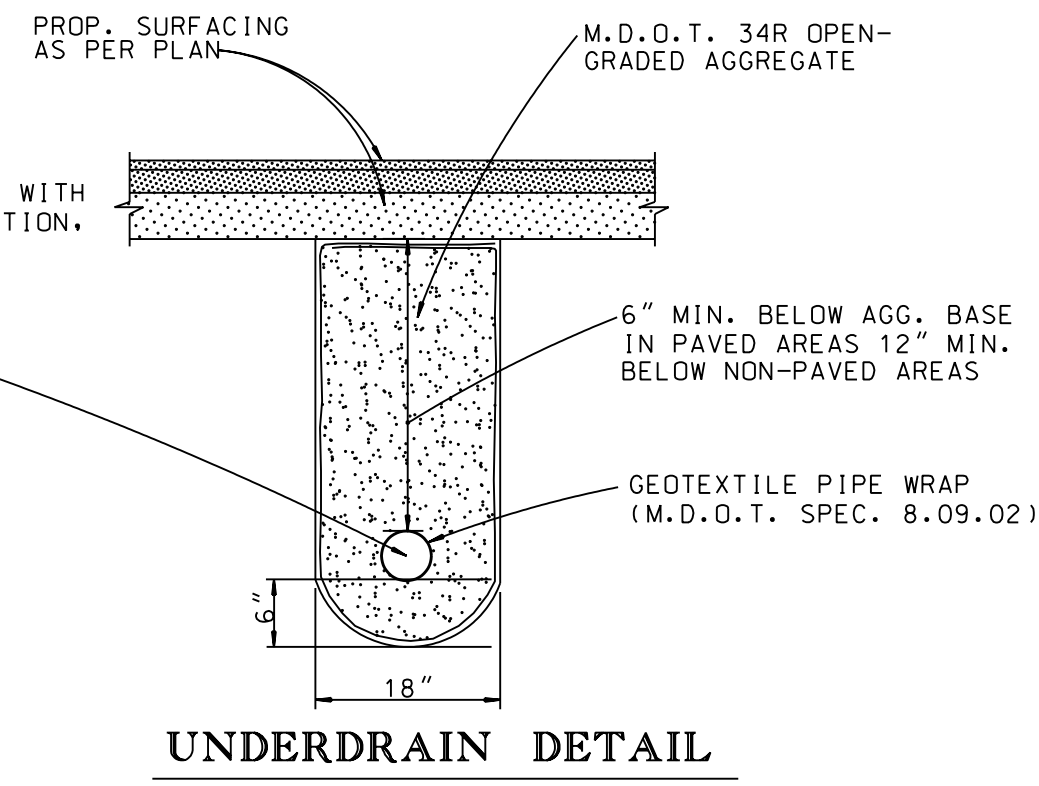


**REAR YARD UNDERDRAIN CROSS SECTION**

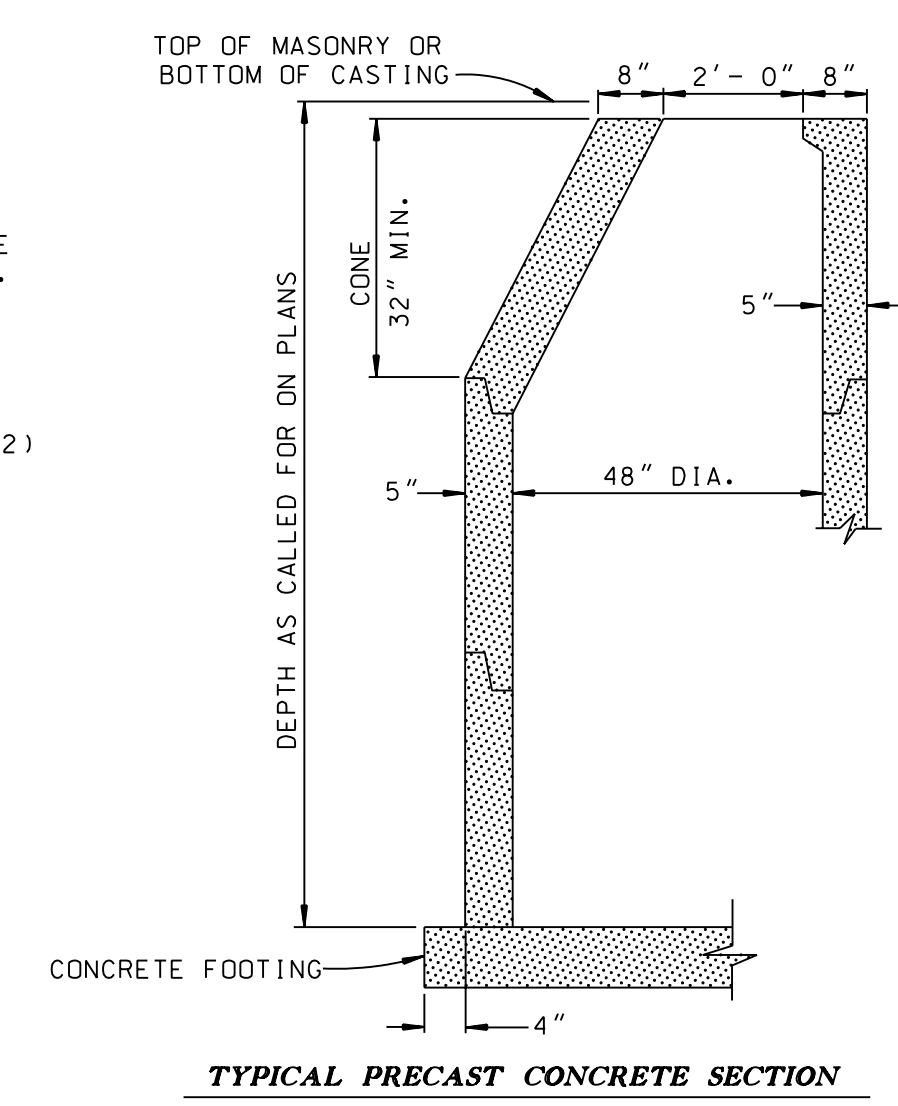
6" MIN. SMOOTH PLASTIC PIPE MEETING ASTM SPECIFICATIONS D 3033 OR D 3034 WITH NOT LESS THAN 30 P.S.I. AT 5% DEFLECTION. "CONTECH" A-2000 PERFORATED PIPE OR APPROVED EQUAL

**GENERAL PIPE BEDDING & TRENCH NOTES**

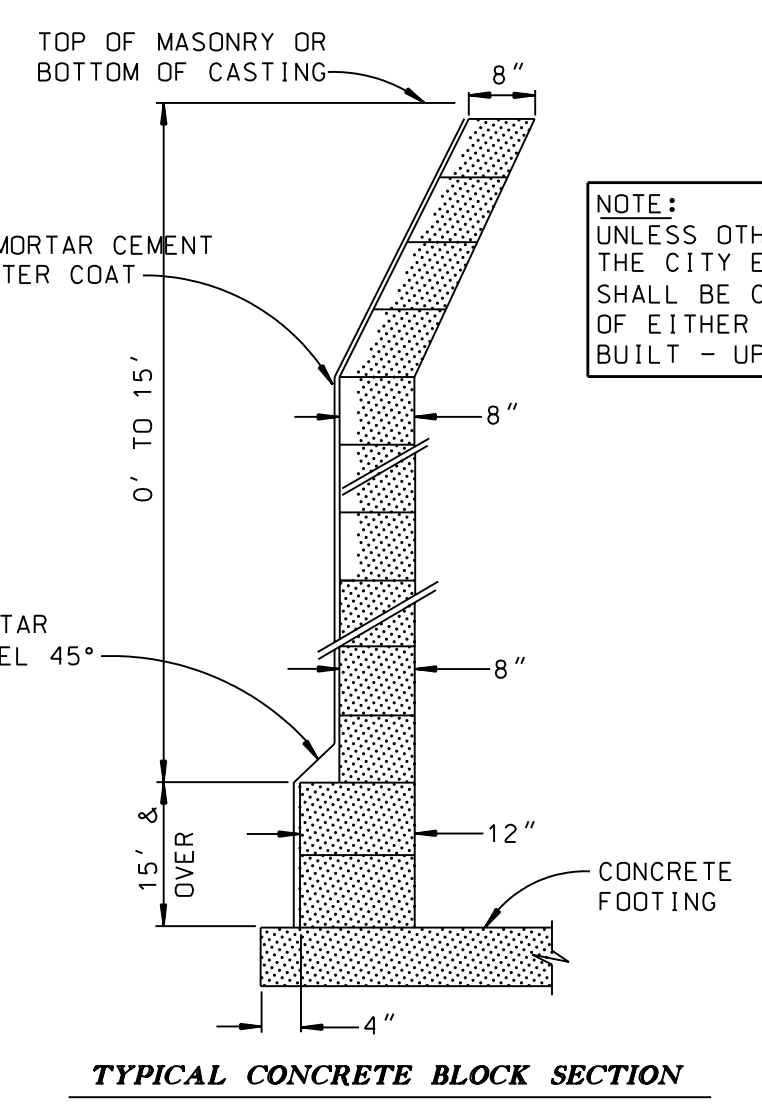
1. THE CONTRACTOR SHALL INSTALL THE PIPE IN ACCORDANCE WITH THE BEDDING DETAIL REQUIRED FOR THE PIPE DEPTH (MEASURED FROM THE TOP OF THE PIPE), AND TRENCH WIDTH (MEASURED ACROSS THE TRENCH AT THE TOP OF THE PIPE) CONSTRUCTED. A CONTRACTOR MAY ALWAYS USE A HIGHER QUALITY BEDDING CLASS THAN REQUIRED. ANY 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 1, OR ALTERNATIVE APPROVED BY THE ENGINEER. ANY MATERIAL INCORPORATED SHALL PROVIDE A MINIMUM OF 90% CRUSHED MATERIAL. MDT 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 11 AND SHALL INCLUDE PEA PEBBLE AND MDT AGGREGATES 20 SERIES, 21 SERIES, 22 SERIES, 23A, 26A, 28 SERIES & 31 SERIES. 90% MINIMUM DENSITY REQUIRED.



**UNDERDRAIN DETAIL**



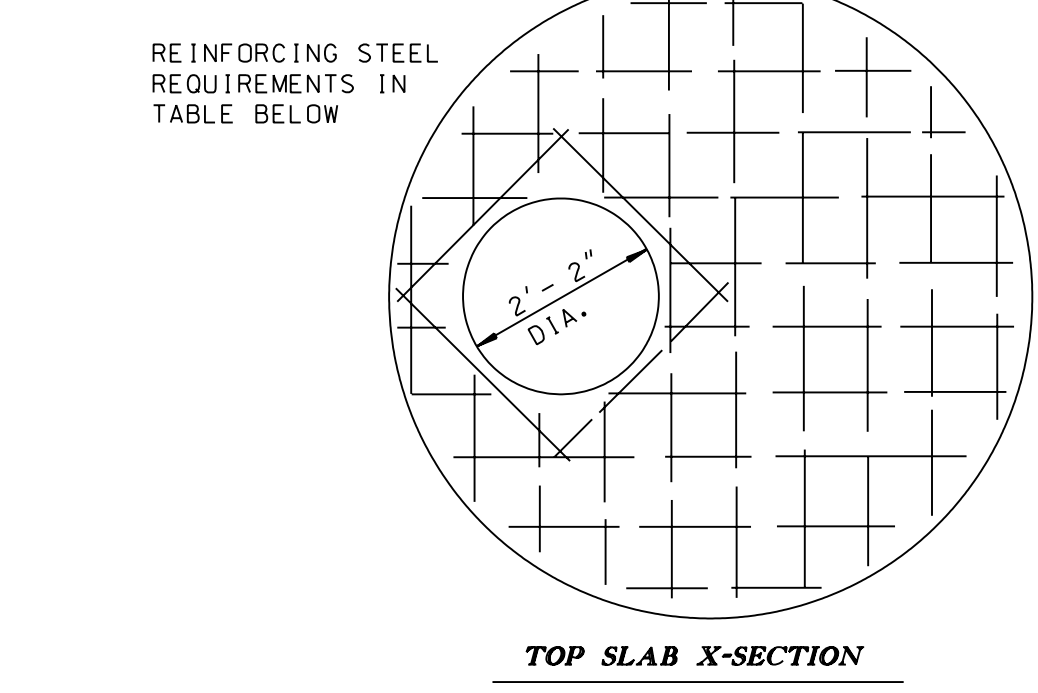
**TYPICAL PRECAST CONCRETE SECTION**



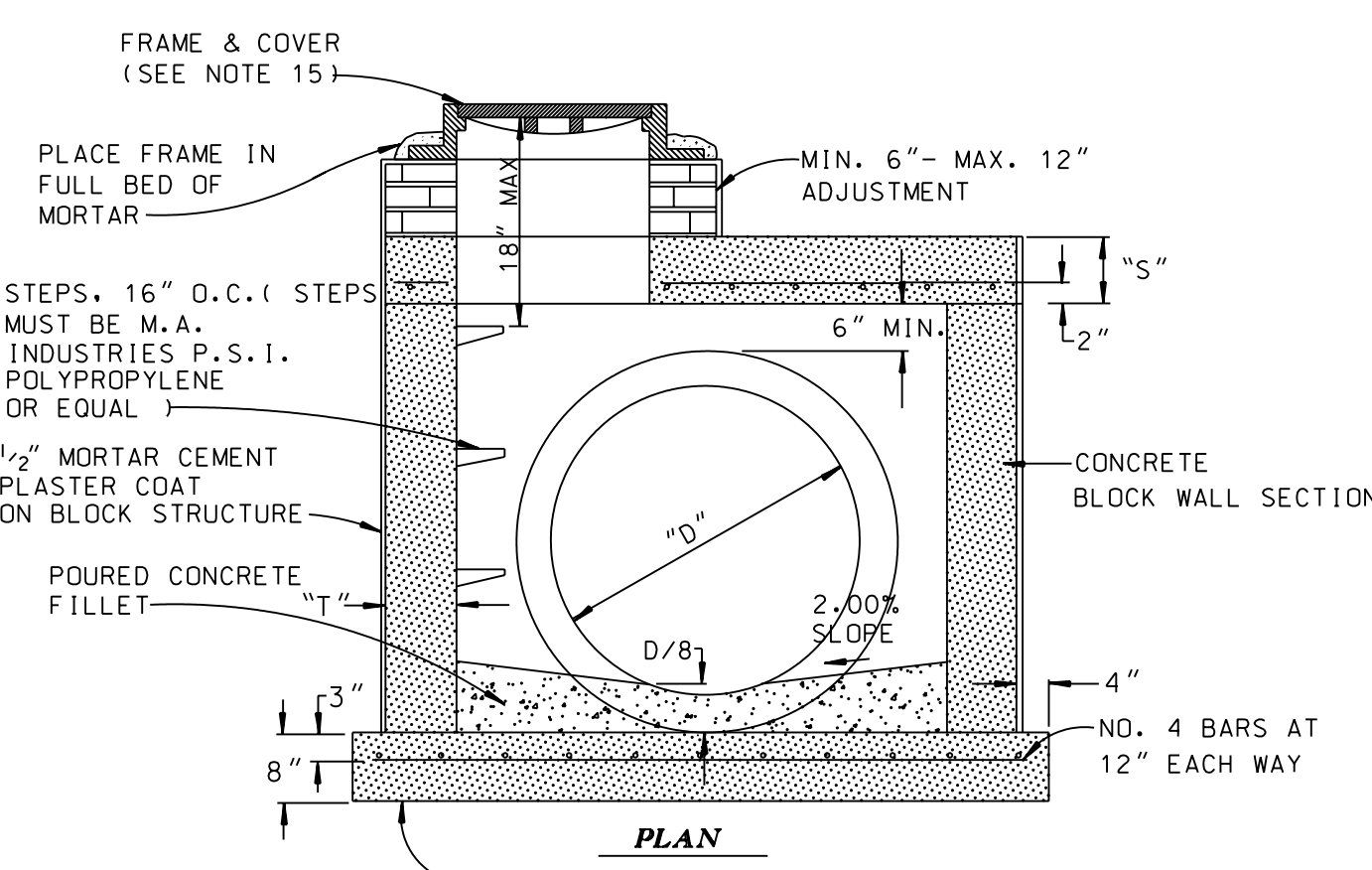
**TYPICAL CONCRETE BLOCK SECTION**

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

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

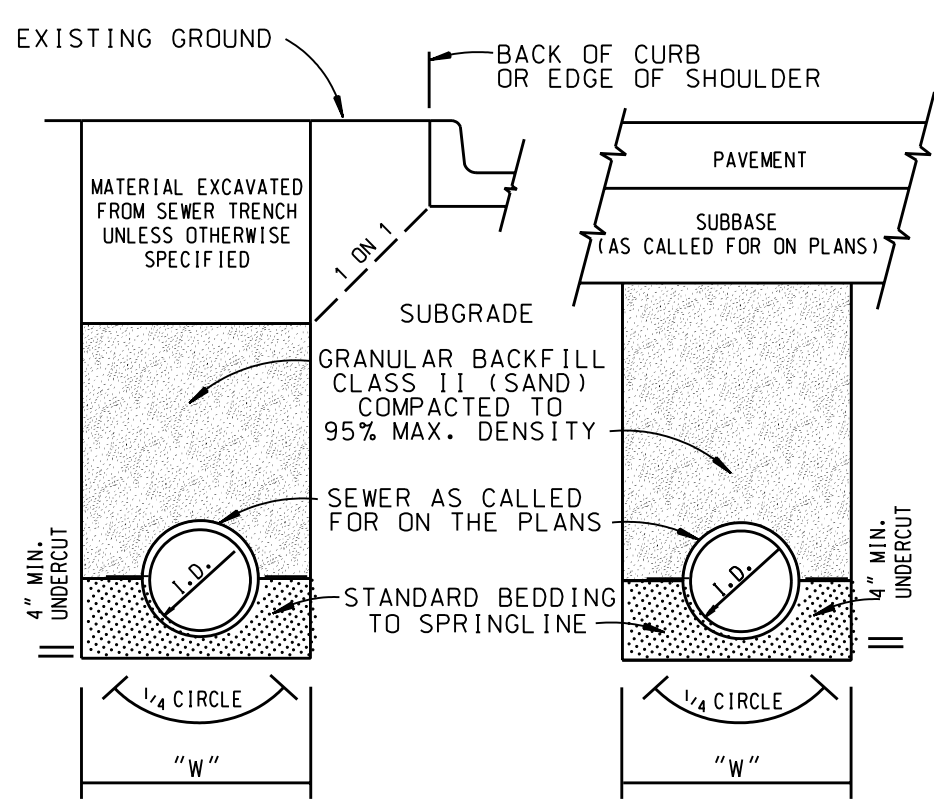


**TOP SLAB X-SECTION**

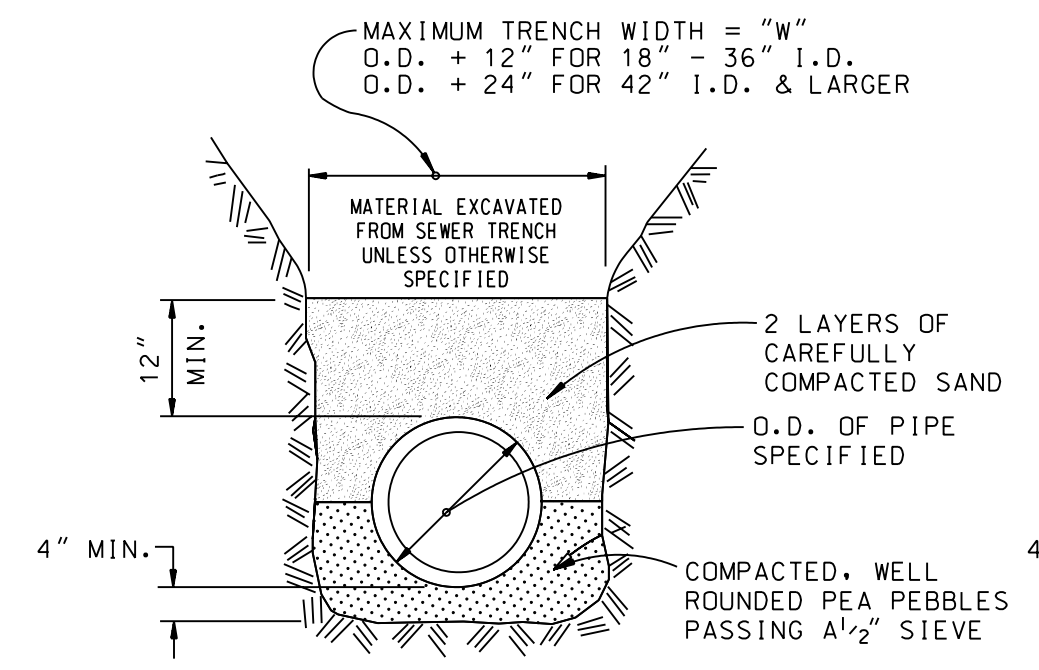


**STORM SEWER MANHOLE A WITH FLAT SLAB**

| OUTLET "D" I.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   |

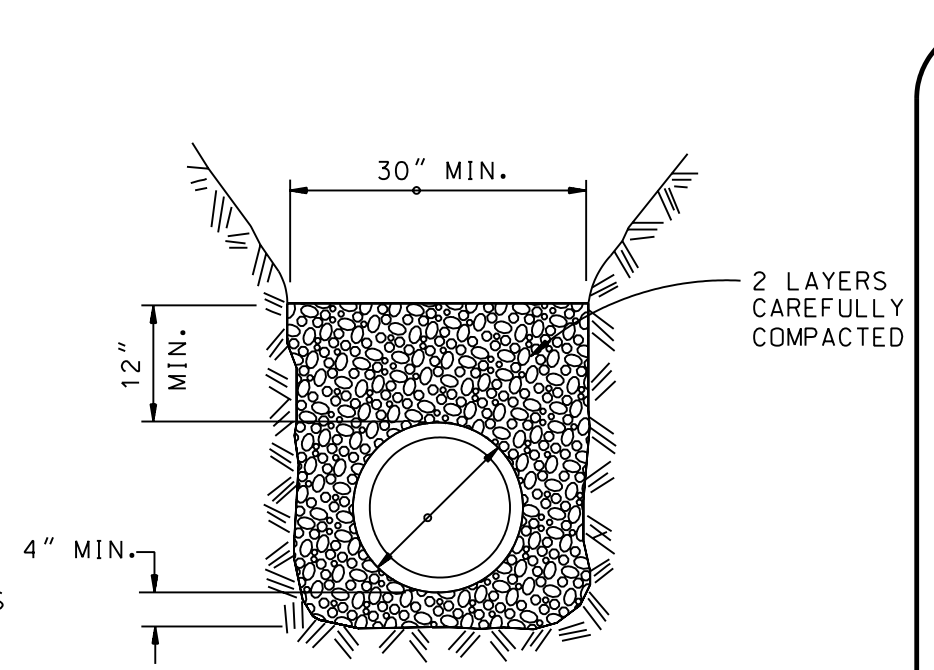


**STANDARD BEDDING TRENCH DETAIL 'B'**



**STANDARD BEDDING TRENCH DETAIL 'A'**

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

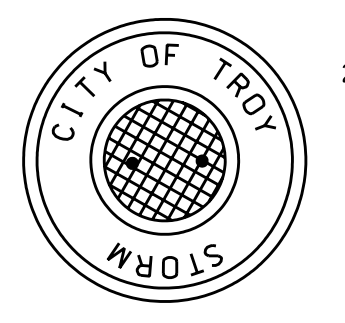


**CRUSHED STONE BEDDING**

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

**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, AND 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 111 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. ISOILS PH & RESISTIVITY TESTS DEMONSTRATE A PH OF 5.0 TO 9.0 AND AN ELECTRICAL RESISTANCE OF 2000 OHM/CM/CM 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" X 1/2" 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 CIRCUMFERENTIAL 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.
10. 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.
11. ALL DRAINAGE STRUCTURES SHALL CONFORM TO THE DETAILS SHOWN. ALL CATCH BASINS SHALL HAVE 2 FT. SUMP.
12. CONNECTIONS TO DRAINAGE STRUCTURES SHALL BE CORED. THE OPENING BETWEEN THE HOLE AND PIPE SHALL BE SEALED WITH A NON-SHRINK GROUT.
13. 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.
14. 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 O1 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 O2 BEEHIVE GRATE
    - 1130 TYPE "N" OVAL GRATE OR TYPE O1 BEEHIVE GRATE
    - 2800 TYPE "N" OVAL GRATE OR TYPE O2 BEEHIVE GRATE
    - 6508 OR 6517
15. 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.
16. BEFORE FINAL ACCEPTANCE, A FINAL INSPECTION SHALL BE MADE BY ALL NECESSARY CITY DEPARTMENTS, AND AS-BUILT SEPIA MYLARS SUBMITTED TO THE ENGINEERING DEPARTMENT.
17. ALL STORM SEWER PIPE 30" AND LARGER SHALL HAVE POINTED JOINTS.
18. ONLY NEW UNDAMAGED STORM SEWER PIPE SHALL BE USED. THE CITY INSPECTOR SHALL HAVE THE RIGHT TO REJECT ANY OR ALL PIPE.



2" LETTERS

(2) 1" HOLES

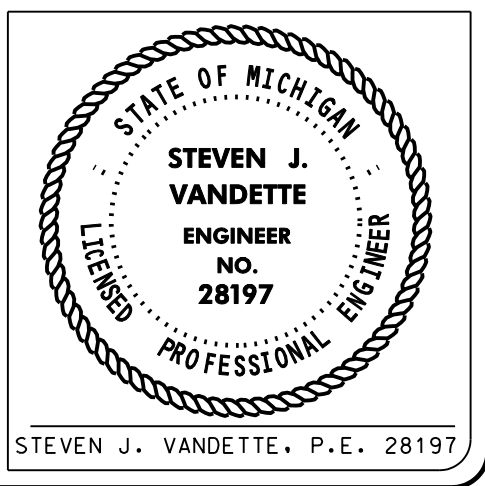
**CITY OF TROY**  
OAKLAND COUNTY, MICHIGAN  
**STANDARD STORM SEWER DETAILS**

**ENGINEERING DEPARTMENT**

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

| DATE | REMARKS |
|------|---------|
|      |         |
|      |         |
|      |         |

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



STEVEN J. VANDETTE, P.E. 28197



**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.

- ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE PERMITS AND STANDARDS AND SPECIFICATIONS OF THE CITY OF TROY.
- 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.
- 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.

- 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.
- 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.
- 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.
- ENGINEER AND OWNER CERTIFICATION MUST BE INCLUDED ON THE PLANS.
- SEPARATE SHEETS SHOWING EROSION PREVENTION AND SEDIMENTATION CONTROL PLANS MUST BE PROVIDED.

- THE FOLLOWING GUIDELINES ARE TO BE IMPLEMENTED:
  - CHECK DAMS
    - STONE SIZE MUST BE INCREASED WITH INCREASED SLOPE AND VELOCITY.
    - 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 CATCH BASIN.
    - ANY ACCUMULATION OF SEDIMENT SHALL BE REMOVED AND STOCKPILED IN A STABILIZED AREA TO PREVENT THE MATERIAL FROM ERODING BACK INTO THE DRAINAGE COURSE.
  - 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.
  - 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.
  - 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 AND THE 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.
  - 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.

- 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.

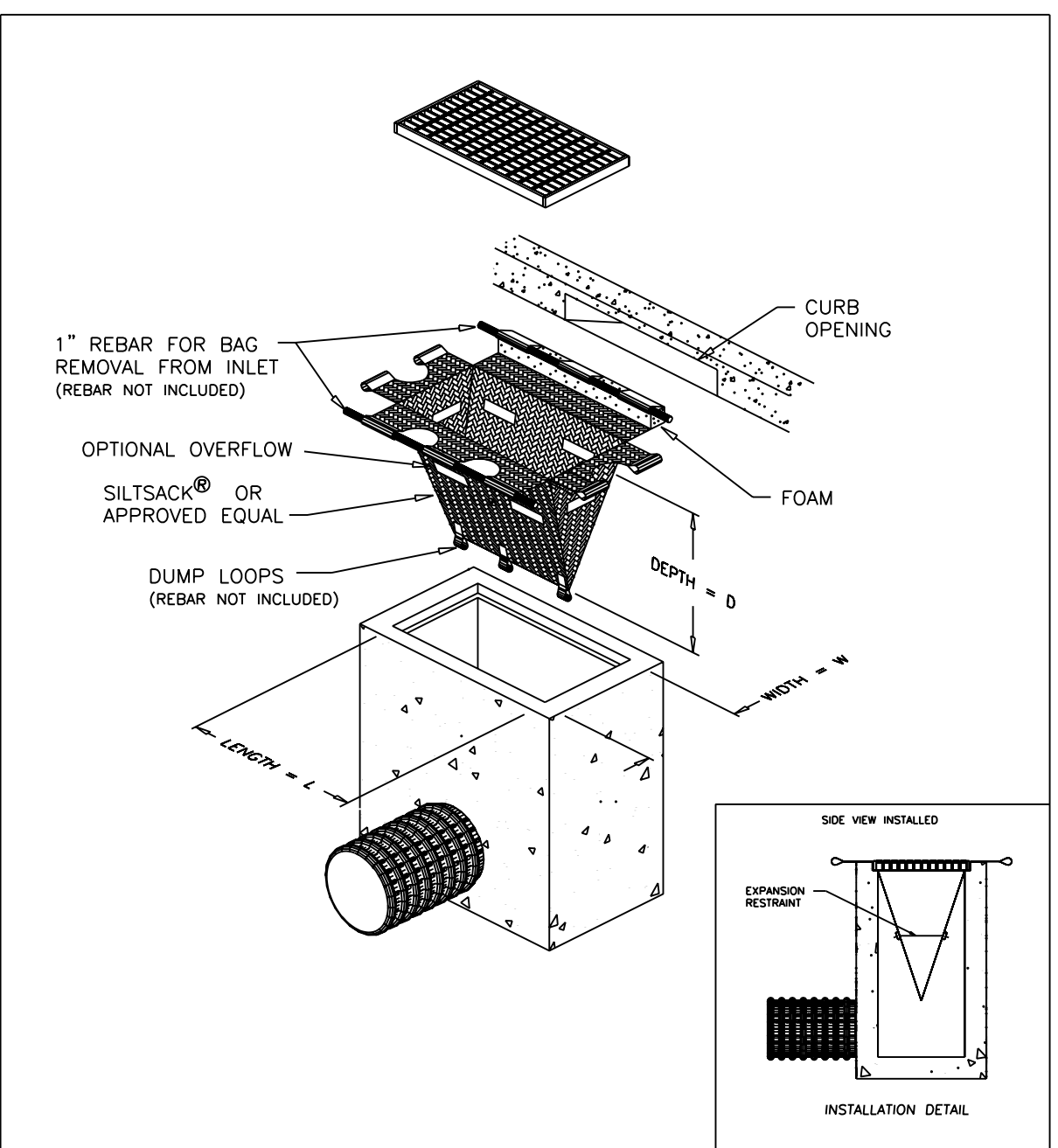
**GENERAL CONSTRUCTION NOTES**

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 INSURE THAT THE PROJECT IS COMPLETED WITHIN THE 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.

- THE CONTRACTOR SHALL NOTIFY THE CITY OF TROY AT (248) 524-3409 THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION.
- 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.
- 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.
- OAKLAND COUNTY DEPT. OF PUBLIC WORKS (OCDPW) PERMITS:
  - ALL DRAIN CROSSINGS AND RELATED WORK IN THE COUNTY 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).

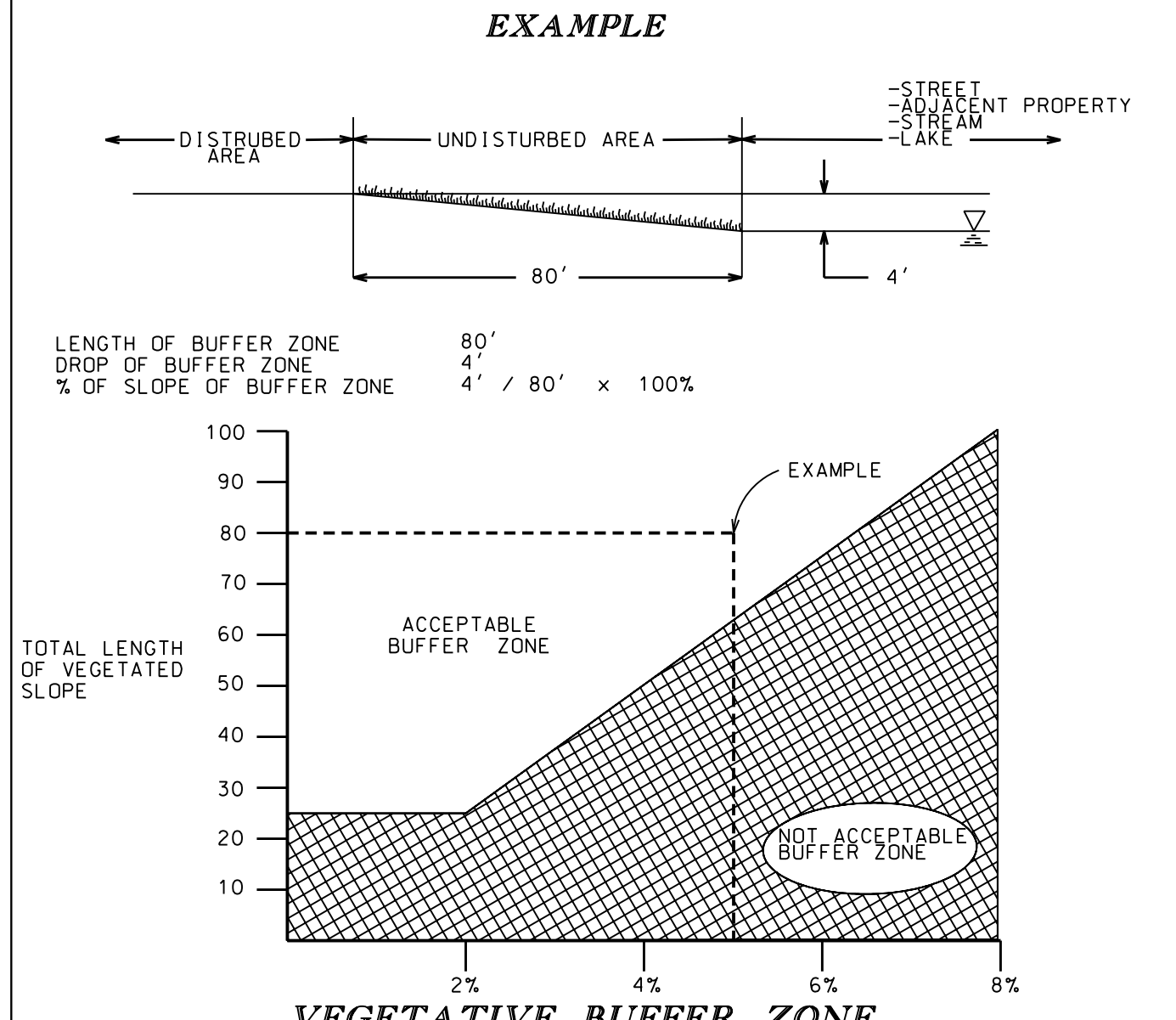
THE CONTRACTOR SHALL PAY FOR ALL INSPECTION OVER EIGHT (8) HOURS PER DAY AND ALL INSPECTION ON SATURDAY AT THE CURRENT HOURLY RATE, PER MAN HOUR. THE CONTRACTOR WILL NOT BE CHARGED FOR OVERTIME ON SATURDAY IF HE HAS FIVE (5) MEN OR LESS PERFORMING CLEAN-UP WORK AND LANDSCAPE ITEMS. IN ADDITION, IF HOLIDAY OR SUNDAY WORK IS PERMITTED BY THE CITY, THE CONTRACTOR SHALL PAY FOR ALL INSPECTION AT THE CURRENT HOLIDAY RATE PER HOUR, PER MAN.

- THE CONTRACTOR SHALL BE RESPONSIBLE 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).
- 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).
- THE TRENCH BACKFILL FOR SANITARY SEWERS AND STORM SEWERS SHALL BE AS SHOWN BELOW.

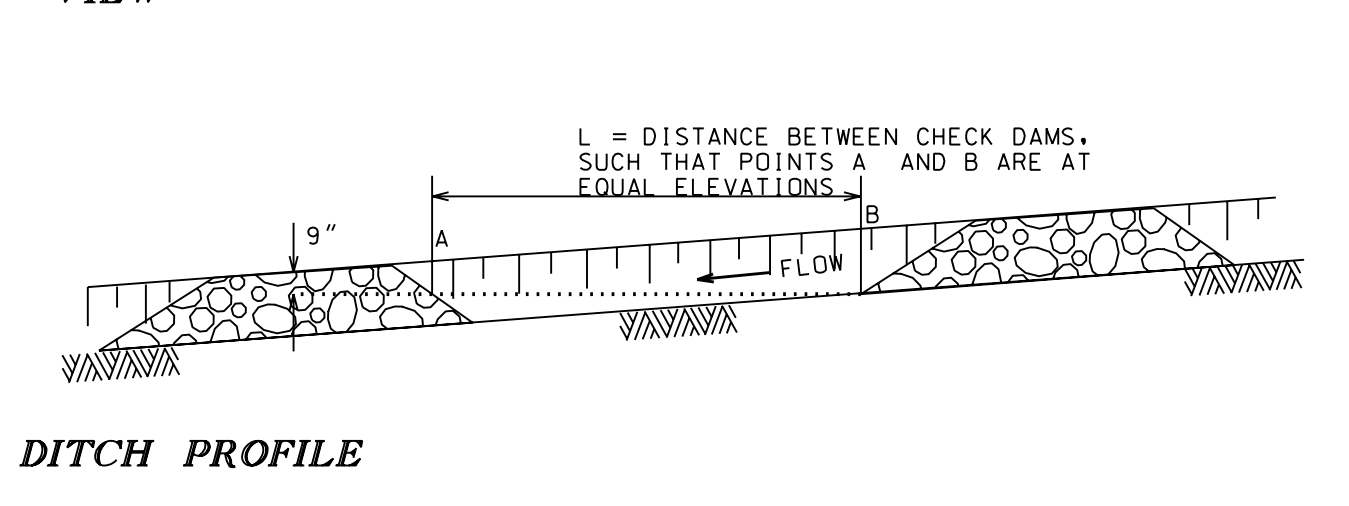
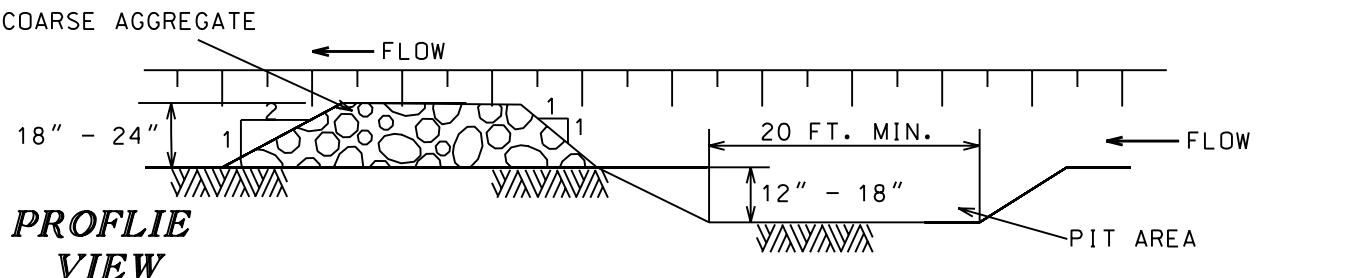
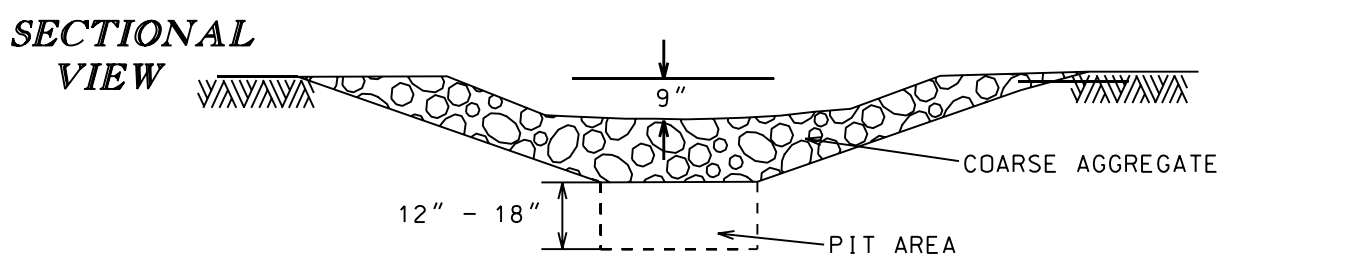
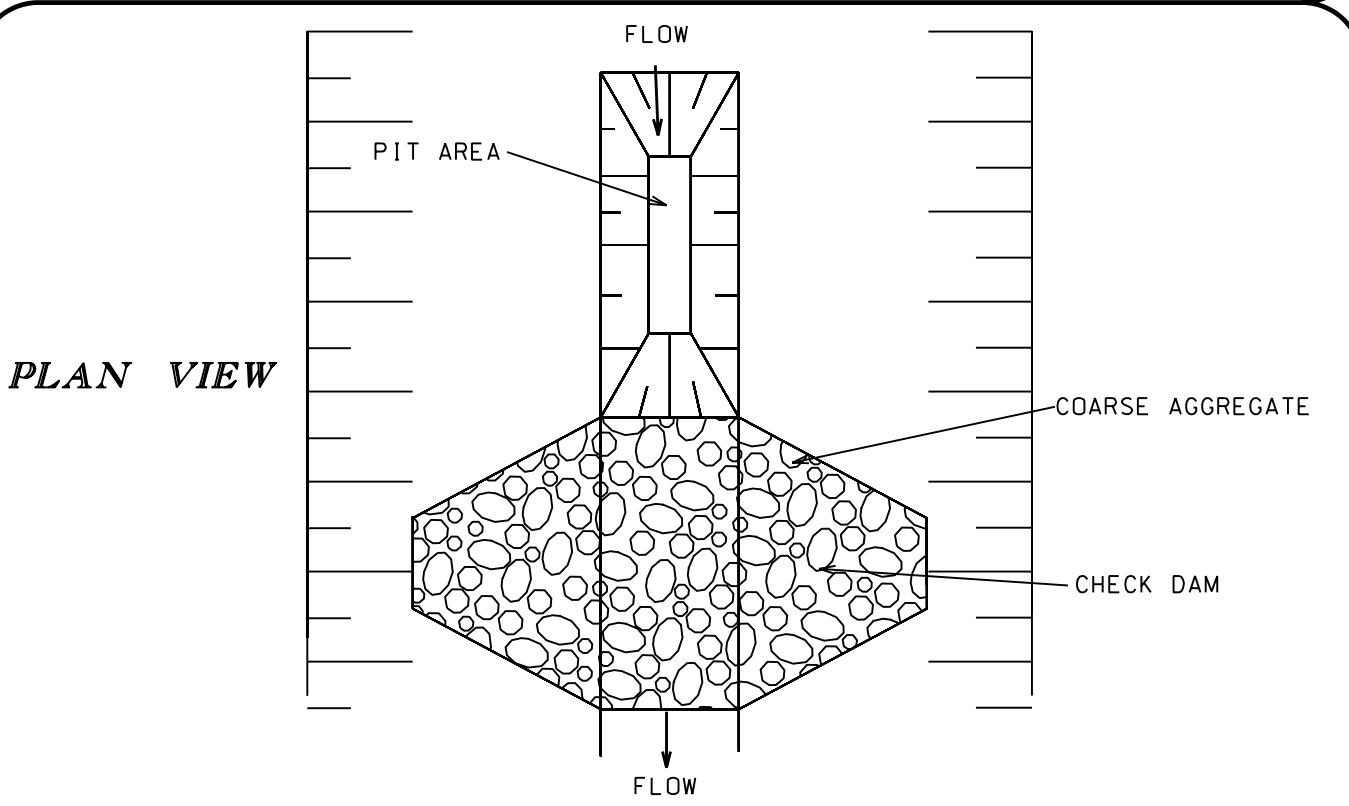


**INLET FILTERS AFTER PAVING OR GRADING**

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.



**VEGETATIVE BUFFER ZONE**



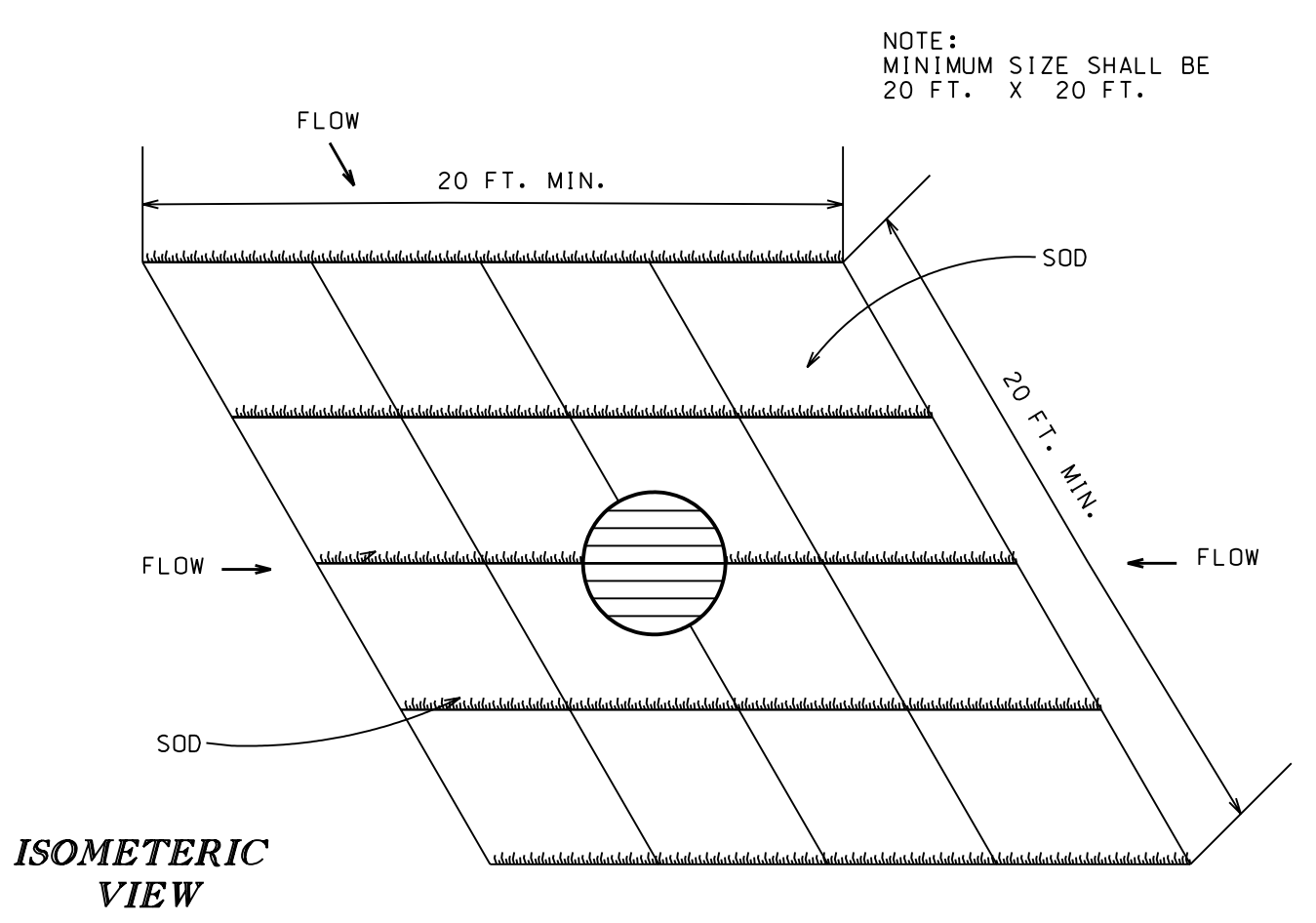
**SEDIMENT TRAP WITH CHECK DAM**

**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.

**NOTE:** MINIMUM SIZE SHALL BE 20 FT. X 20 FT.

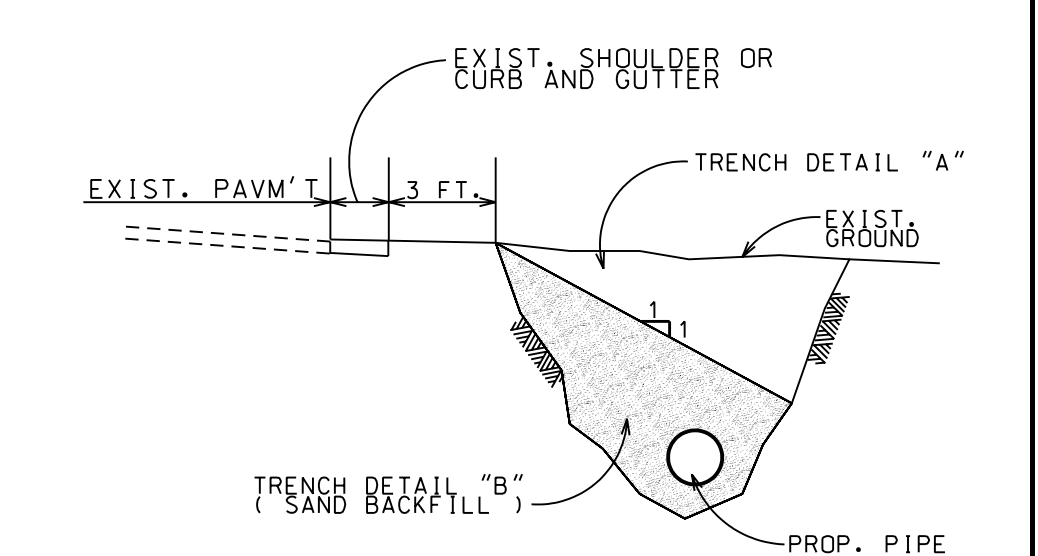


**ISOMETRIC VIEW SOD INLET FILTER**

- THE CONTRACTOR SHALL NOTIFY THE CITY OF TROY AT (248) 524-3409 THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION.
- 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.
- 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.
- OAKLAND COUNTY DEPT. OF PUBLIC WORKS (OCDPW) PERMITS:
  - ALL DRAIN CROSSINGS AND RELATED WORK IN THE COUNTY 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 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.

- THE CONTRACTOR SHALL BE RESPONSIBLE 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).
- 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).
- 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.

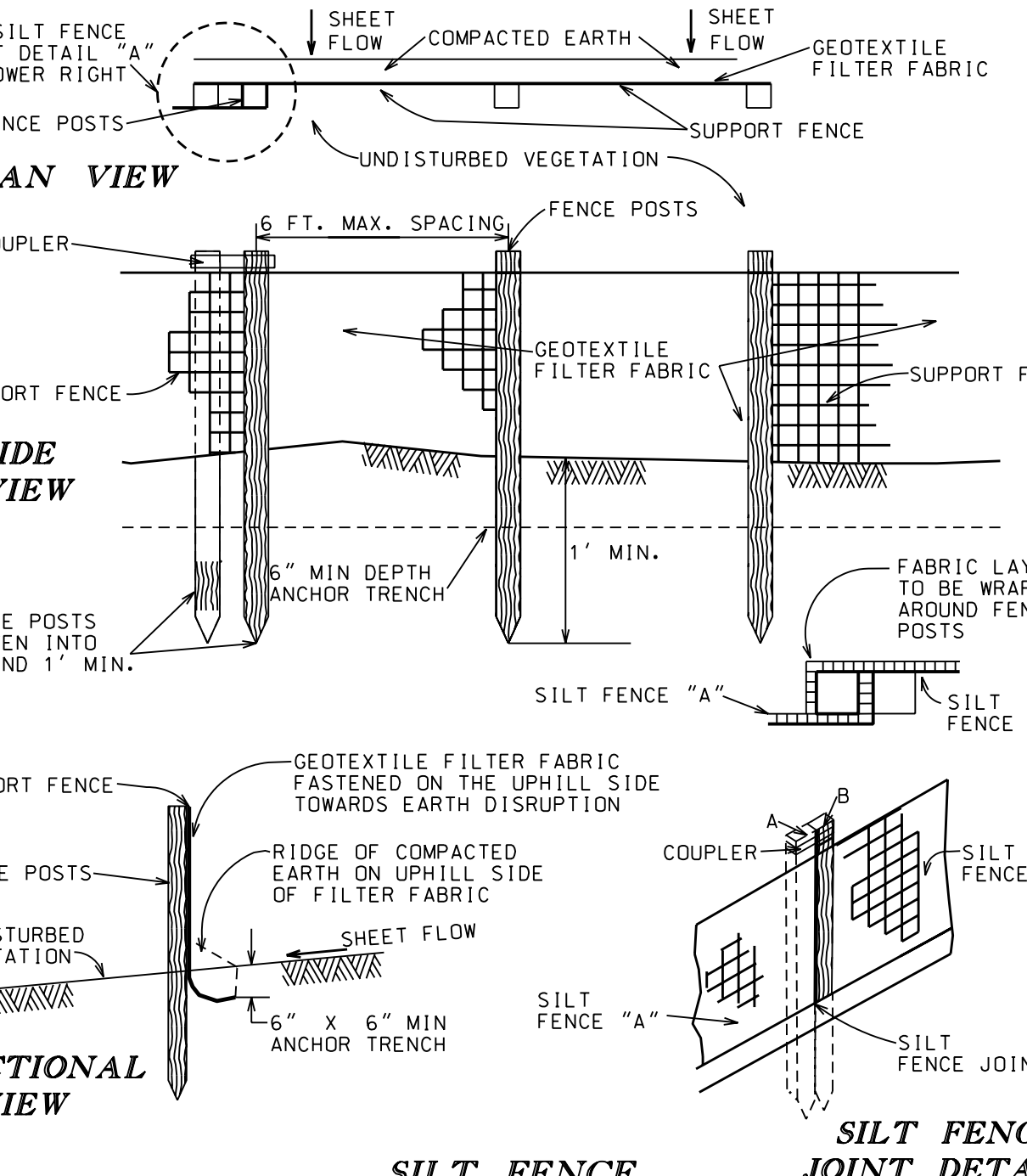
TRENCH DETAIL "B" - SHALL BE SAND BACKFILLED IN 12 INCH LAYERS AND COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT.

- 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).

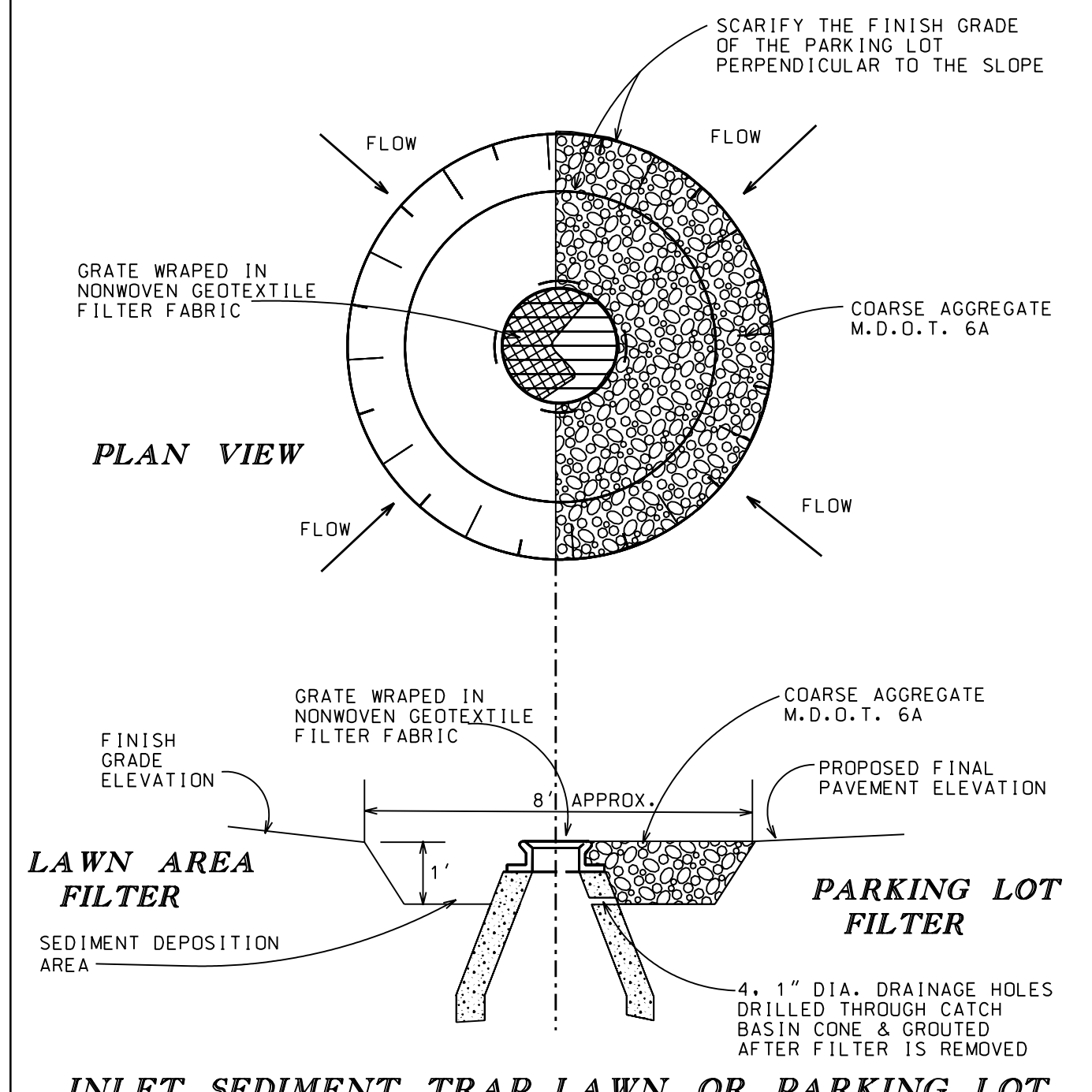
ALL EXISTING MAILBOXES ON THE PROJECT WILL BE TEMPORARILY RESET ALONG THE OWNER'S DRIVEWAY, OR ALONG AN INTERSECTING STREET, BEYOND THE LIMITS OF CONSTRUCTION, AS DIRECTED BY THE ENGINEER. WHEN THE PROJECT IS COMPLETED THE MAILBOXES SHALL BE RESET BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL POSTAL REGULATIONS. THE TEMPORARY RESETTING AND FINAL PLACEMENT OF MAILBOXES SHALL BE INCLUDED IN THE PROJECT AND WILL NOT BE PAID FOR SEPARATELY.

- 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.



**SILT FENCE**



**LAWN AREA FILTER** and **PARKING LOT FILTER**

**CITY OF TROY**  
OAKLAND COUNTY, MICHIGAN

**STANDARD SOIL EROSION & GENERAL CONSTRUCTION (1 OF 1)**

**ENGINEERING DEPARTMENT**

APPROVED BY: STEVEN J. VANDETTE, CITY ENGINEER DATE: \_\_\_\_\_

| REVISIONS | DATE | REMARKS | PROJECT NO. | SHEET NO. |
|-----------|------|---------|-------------|-----------|
|           |      |         |             |           |

DATE: JUNE 2007

DRAWN BY: G.S.F./M.P.B. CHECKED BY: J.E.L.

STEVEN J. VANDETTE, P.E. 28197