

# SITE DEVELOPMENT PLANS FOR:



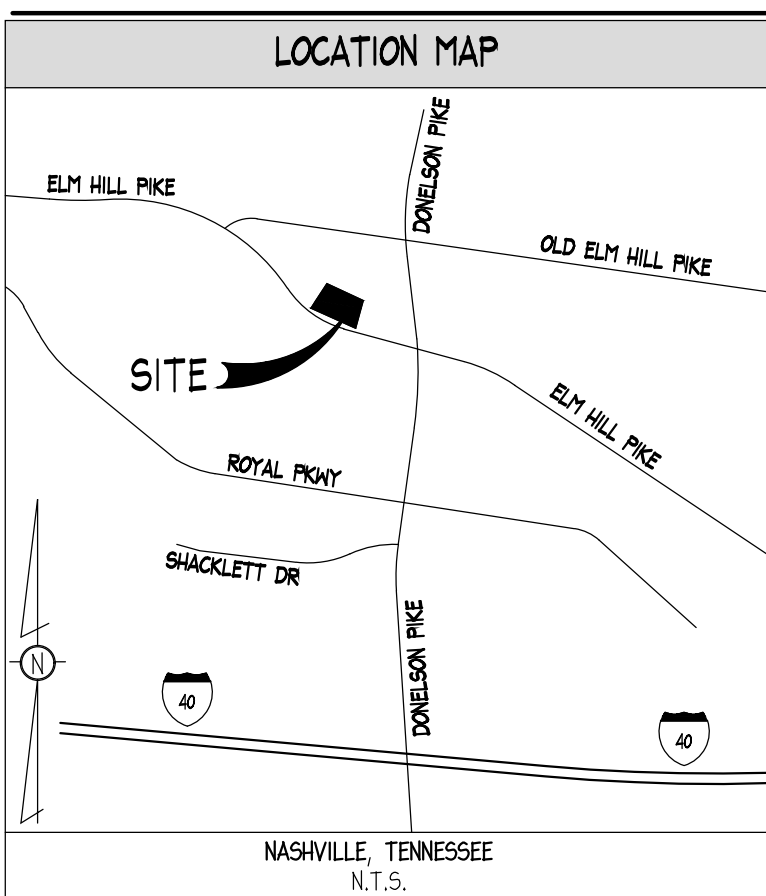
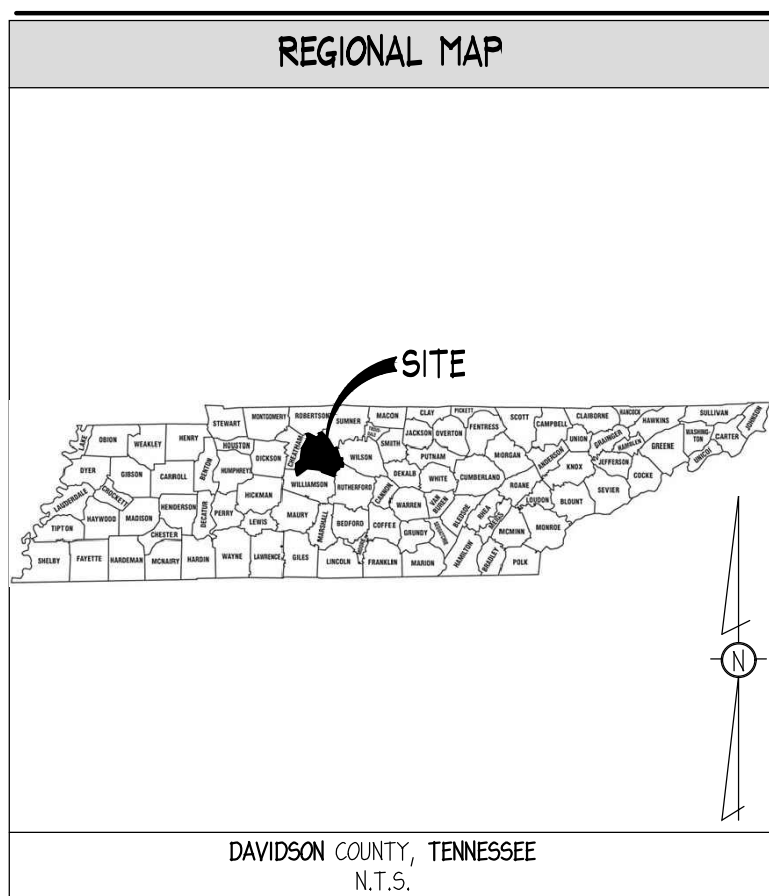
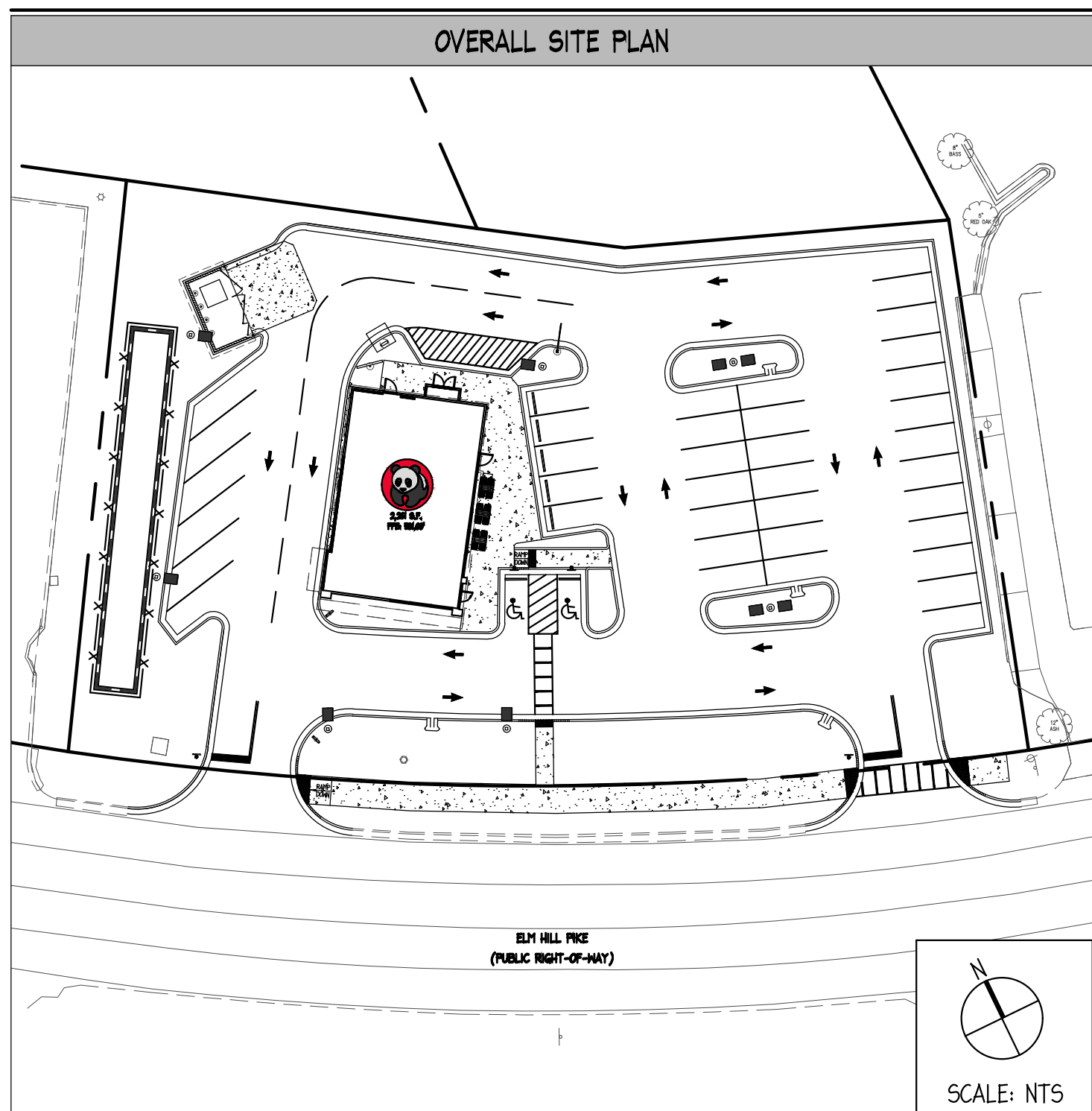
## PANDA EXPRESS, INC. DEVELOPMENT NUMBER: 6559 2740 ELM HILL PIKE DAVIDSON COUNTY, NASHVILLE, TENNESSEE

PREPARED BY:



PREPARED FOR:

PANDA EXPRESS, INC.  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898



### SITE INFORMATION

**JURISDICTION:** NASHVILLE, TENNESSEE  
DAVIDSON COUNTY

**ZONING:** CS (COMMERCIAL SERVICE)

**REQUIRED BUILDING SETBACKS:**  
FRONT: 15'  
SIDE: NONE  
REAR: 20'

**REQUIRED PARKING:**  
1 SPACE IS REQUIRED PER 100 SF OF GROSS FLOOR AREA (GFA) OF THE BUILDING.  
ASSUMING A 2,281 SF BUILDING, 23 SPACES ARE REQUIRED.

**PROPOSED PARKING:**  
8.5' X 18' (REGULAR) = 38  
8' X 18' (HC) = 2  
TOTAL = 40

**DRIVE AISLE:** 24'

**SITE AREA CALCULATIONS:**  
SITE: 10.84 AC.  
PERVIOUS AREA: 10.21 AC. (1.25.21)  
IMPERVIOUS AREA: 10.63 AC. (174.66)  
DISTURBED AREA: 10.98 AC.

**FLOOD HAZARD:**  
NO PORTION OF THIS PROPERTY IS LOCATED IN A SPECIAL FLOOD AREA AS PER  
F.I.R.M. MAP NO. 47037C02684, DATED 04/05/2017.

**EXISTING INFORMATION:**  
PROVIDED BY CANNON & CANNON, INC., DATED 10/01/2018 (SEE SHEET C02.0).

CONTRACTOR SHALL COORDINATE FINAL LOCATION WITH SIGN COMPANY AND PANDA EXPRESS PM FOR FINAL LOCATION OF DRIVE THRU ELEMENTS (MENU BOARD, ORDER CANOPY, CLEARANCE BAR, AND DIRECTIONAL SIGNAGE) PRIOR TO INSTALLATION. CONTRACTOR SHALL ENSURE THAT PROPOSED UTILITIES, INCLUDING SITE LIGHTING CONDUIT ARE NOT INSTALLED SO THAT THEY WOULD CONFLICT WITH THE PLACEMENT OF THE DRIVE THRU ELEMENTS AND FOOTINGS.

THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL LOCAL, STATE, AND FEDERAL CERTIFICATION AND LICENSING REQUIREMENTS FOR CONSTRUCTION, INCLUDING BUT NOT LIMITED TO: LAND DISTURBANCE PERMITS, BUILDING PERMITS, DEMOLITION PERMITS, NPDES PERMITS, DEWATERING PERMITS, ETC.



CONTRACTOR SHALL ENSURE 100% COVERAGE OF ALL LANDSCAPED AREAS WITHIN LIMITS OF WORK, INCLUDING POTENTIAL OFFSITE AREAS. COVERAGE SHALL INCLUDE BOTH LANDSCAPING AND IRRIGATION.

CONTRACTOR SHALL PROTECT ALL ITEMS OUTSIDE LIMITS OF CONSTRUCTION UNLESS OTHERWISE NOTED IN THE CONSTRUCTION PLANS OR SPECIFICATIONS.

CONTRACTOR SHALL COORDINATE AND VERIFY LOCATION OF ALL SIGNAGE WITH OWNER PRIOR TO CONSTRUCTION.

THE GEOTECHNICAL INVESTIGATION PREPARED BY TERRACON CONSULTANTS, INC., DATED 08/16/2018 AND ANY SUBSEQUENT ADDENDA ARE CONSIDERED PART OF THE CONTRACT DOCUMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE REPORT'S RECOMMENDATIONS AND FINDINGS WITH THE OWNER, ENGINEER AND ARCHITECT PRIOR TO CONSTRUCTION. IMPLEMENTATION OF THE REPORT'S RECOMMENDATIONS MAY REQUIRE THE CONTRACTOR TO PERFORM ADDITIONAL WORK NOT SHOWN ON THE CIVIL PLANS INCLUDING BUT NOT LIMITED TO EXCAVATION, REMEDIATION, DEWATERING, COMPACTION ETC.

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES (LOCATIONS AND ELEVATIONS) PRIOR TO STARTING CONSTRUCTION AND ALERT ENGINEER TO ANY DISCREPANCIES IMMEDIATELY.

24-HOUR CONTACT:  
CLAY WORTHY  
602-931-6540

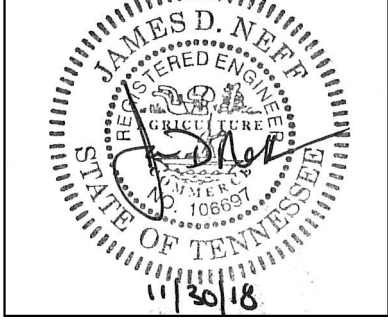
CONTRACTOR SHALL COORDINATE AND ADJUST LOCATION OF LOOP DETECTORS TO AVOID UTILITY CONFLICTS PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL INSTALL GENERAL UTILITY CONDUITS TO PLANTERS AROUND BUILDING AND PATIO. SEE ARCHITECTURAL/MEP PLANS FOR CONTINUATION.

| SHEET INDEX |  |                            |           |  |  |  |  |  |  |  |  |
|-------------|--|----------------------------|-----------|--|--|--|--|--|--|--|--|
| NO.         | TITLE  | ISSUE 0 - ISSUE FOR PERMIT | 1/20/2018 |  |  |  |  |  |  |  |  |
| C01.0       | COVER SHEET                                      | ●                          |           |  |  |  |  |  |  |  |  |
| C01.1       | GENERAL NOTES                                    | ●                          |           |  |  |  |  |  |  |  |  |
| C02.0       | ALTA/ACSM SURVEY (BY OTHERS)                     | ●                          |           |  |  |  |  |  |  |  |  |
| C02.1       | DEMOLITION PLAN                                  | ●                          |           |  |  |  |  |  |  |  |  |
| C03.0       | SITE PLAN  | ●                          |           |  |  |  |  |  |  |  |  |
| C03.1       | STAKING PLAN                                     | ●                          |           |  |  |  |  |  |  |  |  |
| C03.2       | HARDSCAPE DETAILS I                              | ●                          |           |  |  |  |  |  |  |  |  |
| C03.3       | HARDSCAPE DETAILS II                             | ●                          |           |  |  |  |  |  |  |  |  |
| C04.0       | UTILITY PLAN                                     | ●                          |           |  |  |  |  |  |  |  |  |
| C04.1       | UTILITY DETAILS I                                | ●                          |           |  |  |  |  |  |  |  |  |
| C04.2       | UTILITY DETAILS II                               | ●                          |           |  |  |  |  |  |  |  |  |
| C04.3       | UTILITY DETAILS III                              | ●                          |           |  |  |  |  |  |  |  |  |
| C04.4       | UTILITY DETAILS IV                               | ●                          |           |  |  |  |  |  |  |  |  |
| C04.5       | PROFILES I                                       | ●                          |           |  |  |  |  |  |  |  |  |
| C04.6       | PROFILES II                                      | ●                          |           |  |  |  |  |  |  |  |  |
| C05.0       | GRADING AND DRAINAGE PLAN                        | ●                          |           |  |  |  |  |  |  |  |  |
| C05.1       | BIORETENTION PLAN I                              | ●                          |           |  |  |  |  |  |  |  |  |
| C05.2       | BIORETENTION PLAN II                             | ●                          |           |  |  |  |  |  |  |  |  |
| C05.3       | BIORETENTION DETAILS                             | ●                          |           |  |  |  |  |  |  |  |  |
| C06.0       | ESPC PLAN - CLEARING PHASE                       | ●                          |           |  |  |  |  |  |  |  |  |
| C06.1       | ESPC PLAN - GRADING PHASE                        | ●                          |           |  |  |  |  |  |  |  |  |
| C06.2       | ESPC PLAN - FINAL PHASE                          | ●                          |           |  |  |  |  |  |  |  |  |
| C06.3       | ESPC DETAILS I                                   | ●                          |           |  |  |  |  |  |  |  |  |
| C06.4       | ESPC DETAILS II                                  | ●                          |           |  |  |  |  |  |  |  |  |
| C06.5       | ESPC DETAILS III                                 | ●                          |           |  |  |  |  |  |  |  |  |
| C06.6       | ESPC DETAILS IV                                  | ●                          |           |  |  |  |  |  |  |  |  |
| L01.0       | LANDSCAPE PLAN (BY OTHERS)                       | ●                          |           |  |  |  |  |  |  |  |  |
| L01.1       | LANDSCAPE DETAILS (BY OTHERS)                    | ●                          |           |  |  |  |  |  |  |  |  |
| SLO1.0      | SITE PHOTOMETRIC PLAN (BY OTHERS)                | ●                          |           |  |  |  |  |  |  |  |  |
| W-CIP1      | TITLE SHEET (BY OTHERS)                          | ●                          |           |  |  |  |  |  |  |  |  |
| W-CIP2      | PLAN, ELEVATION VIEW, & DETAIL SHEET (BY OTHERS) | ●                          |           |  |  |  |  |  |  |  |  |
| W-CIP3      | DETAIL SHEET (BY OTHERS)                         | ●                          |           |  |  |  |  |  |  |  |  |



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SUITE 250  
TAMPA, FL 33618  
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WWW.INGENIUMENTERPRISES.COM



PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:  
**PANDA EXPRESS, INC.**  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

| REVISION HISTORY |                  |
|------------------|------------------|
| 1                | ISSUE FOR PERMIT |

THE CIVIL ENGINEER REGULARLY UPDATES ELECTRONIC FILES DURING THE DEVELOPMENT OF A PROJECT AS A RESULT THE DATA INCLUDED IN ANY CAD FILE OR DRAWING PRIOR TO ITS FINAL RELEASE DOES NOT NECESSARILY REFLECT THE COMPLETE SCOPE OR CONTENT AS DEFINED IN THE CONTRACT. THE CONTENTS IN THESE FILES MAY THEREFORE BE PRELIMINARY, INCOMPLETE, WORK IN PROGRESS, AND SUBJECT TO CHANGE. FURTHERMORE, THE INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF THE CIVIL ENGINEER. THE ORIGINAL DESIGN REPRESENTED HERE BY THIS INFORMATION SHALL NOT BE USED, ALTERED, OR REPRODUCED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT OF THE CIVIL ENGINEER. THESE PLANS ARE SUBJECT TO FEDERAL COPYRIGHT LAWS AND USE OF SAME WITHOUT EXPRESSED WRITTEN PERMISSION OF THE CIVIL ENGINEER IS PROHIBITED.

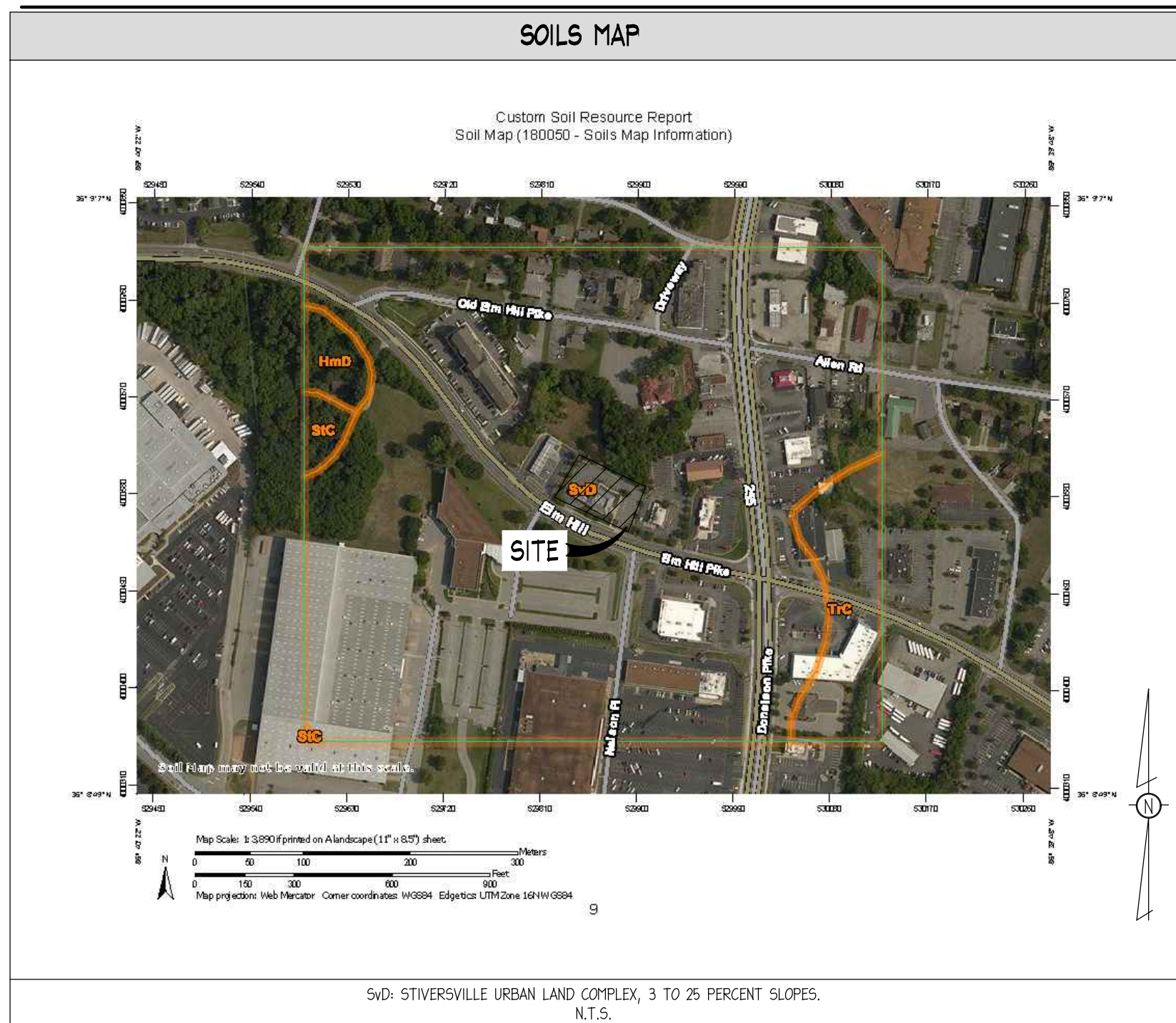
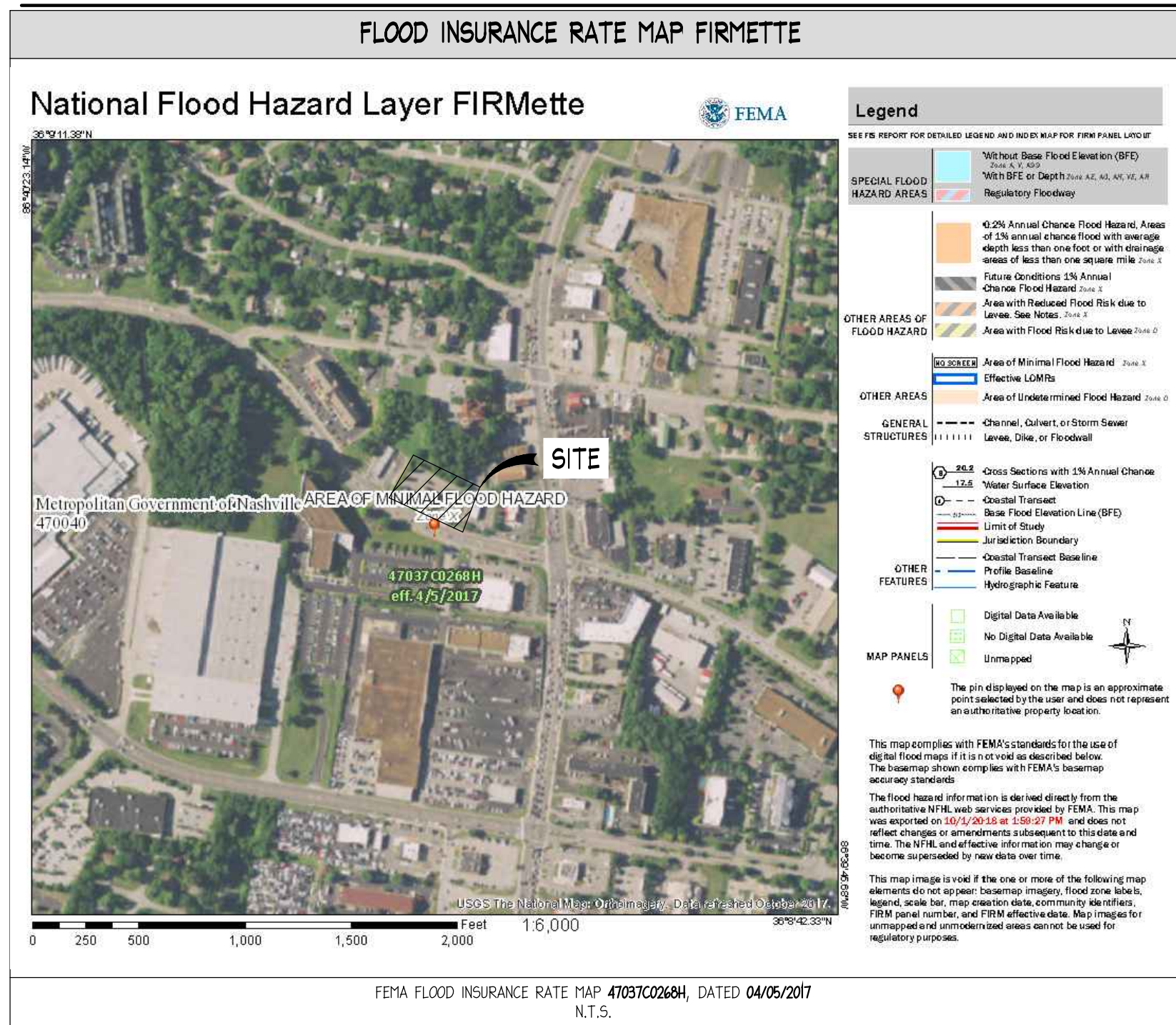
PROJ # 180050  
DWG NAME 180050 CD.DWG  
ISSUE DATE 11/30/2018  
PROJ TGR LLC

COVER SHEET

C01.0  
SHEET NUMBER

ISSUE FOR PERMIT





| ABBREVIATIONS |                                |
|---------------|--------------------------------|
| ASPH          | = ASPHALT                      |
| BC            | = BOTTOM OF CURB               |
| BFP           | = BACKFLOW PREVENTER           |
| BN            | = BOTTOM OF MALL               |
| CG            | = CURB AND GUTTER              |
| CB            | = CATCH BASIN                  |
| CF            | = CUBIC FEET                   |
| CL            | = CENTERLINE                   |
| CMP           | = CORRUGATED METAL PIPE        |
| CO            | = GENERAL CLEAN OUT            |
| CONC.         | = CONCRETE                     |
| CH            | = COLD WATER SUPPLY            |
| CY            | = CUBIC YARD                   |
| D.O.T.        | = DEPARTMENT OF TRANSPORTATION |
| DI            | = DROP INLET                   |
| DS            | = DOWN SPOUT                   |
| DIP           | = DUCTILE IRON PIPE            |
| E             | = EAST                         |
| EL            | = ELEVATION                    |
| EGL           | = ENERGY GRADE LINE            |
| EXIST.        | = EXISTING                     |
| FDC           | = FIRE DEPARTMENT CONNECTION   |
| FES           | = FLARED END SECTION           |
| FFE           | = FINISH FLOOR ELEVATION       |
| FH            | = FIRE HYDRANT                 |
| GC            | = GENERAL CONTRACTOR           |
| GSF           | = GROSS SQUARE FEET            |
| GT            | = GREASE TRAP                  |
| GV            | = GATE VALVE                   |
| HDPE          | = HIGH DENSITY POLYETHYLENE    |
| HGL           | = HYDRAULIC GRADE LINE         |
| HN            | = HOT WATER SUPPLY             |
| I             | = INTERNAL ANGLE               |
| INV.          | = INVERT                       |
| IRR           | = IRRIGATION                   |
| L.C.          | = LENGTH OF CURVE              |
| LFEE          | = LOWER FINISH FLOOR ELEVATION |
| LP            | = LIGHT POLE/FIXTURE           |
| LS            | = LANDSCAPE                    |
| MH            | = MANHOLE                      |
| N             | = NORTH                        |
| PC            | = POINT OF CURVATURE           |
| PI            | = POINT OF INTERSECTION        |
| PIV           | = POST INDICATOR VALVE         |
| PROP          | = PROPOSED                     |
| PT            | = POINT OF TANGENCY            |
| PVC           | = POLYVINYL CHLORIDE PIPE      |
| R             | = RADIUS OF CURVE              |
| RCP           | = REINFORCED CONCRETE PIPE     |
| RD            | = ROOF DRAIN                   |
| R/W           | = RIGHT-OF-WAY                 |
| S             | = SOUTH                        |
| SF            | = SQUARE FEET                  |
| SSE           | = SANITARY SEWER EASEMENT      |
| STD           | = STANDARD                     |
| SY            | = SQUARE YARD                  |
| T             | = TANGENT OF CURVE LENGTH      |
| TC            | = TOP OF CURB                  |
| TB            | = THRUST BLOCKING              |
| TW            | = TOP OF WALL                  |
| TYP.          | = TYPICAL                      |
| W             | = WEST                         |
| WM            | = WATER METER                  |
| W.S.          | = WATER SURFACE                |
| W.S.E.        | = WATER SURFACE ELEVATION      |
| YR            | = YEAR                         |

SEE SURVEY/EXISTING CONDITIONS FOR ABBREVIATIONS SPECIFIC TO THAT SHEET

| DEFINITIONS  |  |
|--|--|
| <b>"ISSUED FOR PERMITTING"</b><br>DRAWINGS ARE INTENDED FOR SUBMITTAL TO THE JURISDICTION(S) HAVING AUTHORITY FOR REVIEW, COMMENT, AND/OR APPROVAL. DRAWINGS ARE NOT INTENDED FOR PRICING, BID, OR CONSTRUCTION. |  |
| <b>"NOT ISSUED FOR CONSTRUCTION"</b><br>DRAWINGS ARE INTENDED FOR SUBMITTAL TO THE JURISDICTION(S) HAVING AUTHORITY FOR REVIEW, COMMENT, AND/OR APPROVAL. DRAWINGS ARE NOT INTENDED FOR CONSTRUCTION.            |  |
| <b>"ISSUED FOR CONSTRUCTION"</b><br>DRAWINGS ARE INTENDED FOR PRICING, BID, AND/OR CONSTRUCTION.   |  |
| <b>"NOT"</b><br>1. THREAT OR GRATE ELEVATION FOR CURB INLETS.<br>2. TOP OF STRUCTURE FOR JUNCTION BOXES/COs.<br>3. TOP OF STRUCTURE FOR SANITARY MANHOLES AND CLEANOUTS.   |  |

| EXISTING CONDITIONS LEGEND          |                 |
|-------------------------------------|-----------------|
| DESCRIPTION                         | LINETYPE/SYMBOL |
| IRRIGATION CONTROL VALVE            | ICV             |
| IRON PIN FOUND                      | IPF             |
| IRON PIN SET (1/2" RB)              | IPS             |
| OPEN TOP PIPE                       | OT              |
| CRIMP TOP PIPE                      | CT              |
| CONCRETE MONUMENT FOUND             | CMF             |
| NAIL AND CAP                        | N & C           |
| REBAR                               | RB              |
| POWER POLE                          | PP              |
| TELEPHONE POLE                      | TP              |
| LAND LOT                            | LL              |
| LAND LOT LINE                       | LLL             |
| POINT OF BEGINNING                  | POB             |
| BUILDING LINE                       | BL              |
| CENTER LINE                         | CL              |
| PROPERTY LINE                       | PL              |
| FIRE HYDRANT                        | FH              |
| CATCH BASIN                         | CB              |
| DROP INLET                          | DI              |
| HEADWALL                            | HW              |
| JUNCTION BOX                        | JB              |
| DRAINAGE EASEMENT                   | DE              |
| WATER METER                         | WM              |
| WATER VALVE                         | WV              |
| GAS VALVE                           | GV              |
| MANHOLE                             | MH              |
| RIGHT-OF-WAY MONUMENT FOUND         | ⊠               |
| GAS LINE                            | — GAS —         |
| WATER LINE                          | — WAT —         |
| SANITARY SEWER LINE                 | — SAN —         |
| STORM DRAINAGE PIPE                 | — — — — —       |
| OVERHEAD ELECTRIC LINE              | — OH ELE —      |
| OVERHEAD ELECTRIC/TELEPHONE/TV LINE | — OH E/T/TV —   |
| OVERHEAD ELECTRIC/TELEPHONE LINE    | — OH E/T —      |

| GENERAL NOTES  |  |
|--|--|
| 1. INGENIUM ENTERPRISES, INC. (IE) REGULARLY UPDATES ELECTRONIC FILES DURING THE DEVELOPMENT OF A PROJECT. AS A RESULT, THE DATA INCLUDED IN ANY CAD FILE OR DRAWING PRIOR TO ITS FINAL RELEASE DOES NOT NECESSARILY REFLECT THE COMPLETE SCOPE OR CONTENT AS DEFINED IN THE CONTRACT. THE CONTENTS IN THESE FILES MAY THEREFORE BE PRELIMINARY, INCOMPLETE WORK IN PROGRESS, AND SUBJECT TO CHANGE. FURTHERMORE, THE INFORMATION CONTAINED HEREIN IS THE EXCLUSIVE PROPERTY OF IE. THE ORIGINAL IDEAS REPRESENTED HERE BY THIS INFORMATION SHALL NOT BE USED, ALTERED, OR REPRODUCED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT OF IE.   |  |
| 2. DEVIATIONS FROM THESE PLANS AND NOTES WITHOUT PRIOR CONSENT OF THE OWNER, HIS REPRESENTATIVE, OR THE ENGINEER MAY CAUSE THE WORK TO BE UNACCEPTABLE.  |  |
| 3. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO COVER A COMPLETE PROJECT, READY TO USE, AND ALL ITEMS NECESSARY FOR A COMPLETE AND WORKABLE JOB SHALL BE FURNISHED AND INSTALLED. THIS INCLUDES ALL STRIPPING AND SIGNAGE.  |  |
| 4. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND WILL NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE OWNER TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL BARRICADES, WARNING SIGNS, FLASHING LIGHTS AND TRAFFIC CONTROL DEVICES DURING CONSTRUCTION. CONTRACTOR TO COMPLY WITH ALL OSHA REGULATIONS REQUIREMENTS AND SAFETY MEETING REQUIREMENTS. |  |
| 5. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION, MEANS, METHODS, TECHNIQUES, OR PROCEDURES UTILIZED BY THE CONTRACTOR, NOR FOR THE SAFETY OF PUBLIC OR CONTRACTOR'S EMPLOYEES, OR FOR THE FAILURE OF THE CONTRACTOR TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.   |  |

| PROPOSED LEGEND                    |                 |           |
|------------------------------------|-----------------|-----------|
| GENERAL                            | LINETYPE/SYMBOL | REFERENCE |
| RIGHT-OF-WAY/PROPERTY LINE         | — — — — —       | SEE PLANS |
| CENTERLINE                         | — — — — —       | SEE PLANS |
| LIMITS OF CONSTRUCTION             | — L —           | SEE PLANS |
| DETAIL REFERENCE                   | ⊕               | SEE PLANS |
| ADDENDUM AND/OR REVISION REFERENCE | ⊕               | SEE PLANS |

| SITE/HARDSCAPE     |           |                       |
|--------------------|-----------|-----------------------|
| LINETYPE/SYMBOL    | REFERENCE |                       |
| CHAIN LINK FENCE   | — — — — — | SEE PLANS             |
| RETAINING WALL     | — — — — — | SEE PLANS (BY OTHERS) |
| DUMPSTER ENCLOSURE | — — — — — | SEE PLANS (BY OTHERS) |
| CURB & GUTTER      | — — — — — | DETAIL 3, SHEET C03.3 |
| HEADER CURB        | — — — — — | N/A                   |
| CONCRETE SIDEWALK  | — — — — — | DETAIL 6, SHEET C03.3 |

| UTILITY                             |                   |                       |
|-------------------------------------|-------------------|-----------------------|
| LINETYPE/SYMBOL                     | REFERENCE         |                       |
| DOMESTIC WATER LINE                 | — DN — DN —       | 2" PVC                |
| FIRE WATER LINE                     | — FW — FW —       | N/A                   |
| BUILDING FIRE SPRINKLER LINE        | — FWS — FWS —     | N/A                   |
| IRRIGATION WATER LINE               | — IRR — IRR —     | 1" PVC                |
| DOMESTIC WATER METER (WM)           | ⊕                 | N/A, EXISTING         |
| IRRIGATION METER (IRR)              | ⊕                 | N/A, EXISTING         |
| BACKFLOW PREVENTER (RPZ)            | ⊕                 | N/A, EXISTING         |
| FIRE VAULT (DOC)                    | ⊕                 | N/A                   |
| DC BACKFLOW PREVENTER               | ⊕                 | N/A                   |
| WATER TAP OR TEE                    | ⊕                 | N/A, EXISTING         |
| BUTTER VALVE                        | ⊕                 | DETAIL 3, SHEET C04.3 |
| THRUST BLOCK (TB)                   | ⊕                 | N/A                   |
| FIRE HYDRANT (FH)                   | ⊕                 | N/A                   |
| FIRE DEPARTMENT CONNECTION (FDC)    | ⊕                 | N/A                   |
| SANITARY SEWER (SS)                 | — SS — SS —       | 4" AND 6" SDR-35 PVC  |
| SANITARY MANHOLE (SSMH)             | ⊕                 | DETAIL 1, SHEET C04.2 |
| GENERAL CLEAN OUT (GO)              | ⊕                 | DETAIL 4, SHEET C04.2 |
| SAMPLING MANHOLE                    | ⊕                 | N/A                   |
| SANITARY STRUCTURE NUMBER           | ⊕                 | SEE PLANS             |
| UNDERGROUND ELECTRIC LINE-PRIMARY   | — UGE-P — UGE-P — | N/A                   |
| UNDERGROUND ELECTRIC LINE-SECONDARY | — UGE-S — UGE-S — | ⊕                     |
| POST INDICATOR VALVE                | ⊕                 | N/A                   |
| SITE LIGHTING POLE                  | ⊕                 | SEE PLANS (BY OTHERS) |
| TRANSFORMER PAD                     | ⊕                 | N/A                   |
| METER/CT PEDESTAL                   | ⊕                 | N/A                   |
| UNDERGROUND TELEPHONE LINE          | — UGT — UGT —     | ⊕                     |
| GENERAL UTILITY CONDUIT             | — GU — GU —       | (2) 4" CONDUIT        |
| GAS LINE                            | — G — G —         | SEE PLANS (BY OTHERS) |
| GAS METERS                          | ⊕                 | SEE PLANS (BY OTHERS) |

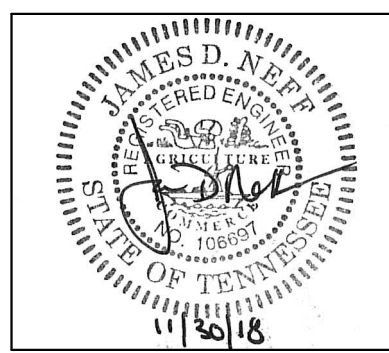
⊕ ALL UTILITIES SHALL BE INSTALLED ACCORDING TO UTILITY PROVIDERS AND JURISDICTION STANDARDS AND SPECIFICATIONS.

| GRADING/DRAINAGE                         | LINETYPE/SYMBOL | REFERENCE             |
|--|-----------------|-----------------------|
| GRADE                                    | — 1000 —        | SEE PLANS             |
| SPOT ELEVATION                           | × 1000.00       | SEE PLANS             |
| STORM DRAIN                              | — — — — —       | SEE PLANS             |
| HEADWALL (HW) / FLARED END SECTION (FES) | ⊕               | N/A                   |
| DROP INLET (GRATE)                       | ⊕               | DETAIL 2, SHEET C04.4 |
| CURB INLET (GRATE AND HOOD)              | ⊕               | DETAIL 1, SHEET C04.4 |
| POND OUTLET STRUCTURE                    | ⊕               | DETAIL 3, SHEET C04.1 |
| JUNCTION BOX (JB) / OCS                  | ⊕               | DETAIL 2, SHEET C04.3 |
| CATCH BASIN (SINGLE WING)                | ⊕               | N/A                   |
| CATCH BASIN (DOUBLE WING)                | ⊕               | N/A                   |
| PEDESTAL TOP                             | ⊕               | N/A                   |
| STORM STRUCTURE NUMBER                   | ⊕               | SEE PLANS             |

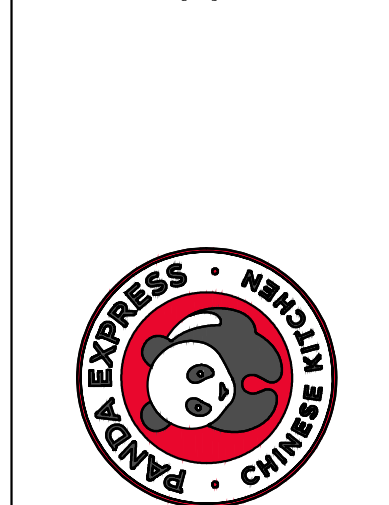
| ESPC B/M                            | LINETYPE/SYMBOL | REFERENCE                 |
|-------------------------------------|-----------------|---------------------------|
| CE CONSTRUCTION EXIT                | ⊕               | SHEET C06.3               |
| SF SILT FENCE                       | — x — x —       | SHEET C06.3               |
| IP STORM DRAIN INLET PROTECTION     | ⊕               | SHEET C06.4               |
| OP STORM DRAIN OUTLET PROTECTION    | ⊕               | SHEET C06.6               |
| TS D.A.S. WITH PERMANENT VEGETATION | ⊕               | REFER TO LANDSCAPE SHEETS |
| SO D.A.S. WITH 500                  | ⊕               | SHEET C06.5               |
| TS D.A.S. WITH TEMPORARY VEGETATION | ⊕               | NOT APPLICABLE            |
| MU D.A.S. WITH MULCH                | ⊕               | SHEET C06.5               |
| CA CONCRETE MASHOUT                 | ⊕               | SHEET C06.4               |
| TW TUBES AND WATTLES                | — — — — —       | SHEET C06.5               |
| RECP ROLLED EROSION CONTROL PRODUCT | ⊕               | SHEET C06.3               |
| TD DIVERSION                        | — TD —          | NOT APPLICABLE            |
| TREE PROTECTION FENCE               | — TPF —         | NOT APPLICABLE            |

D.A.S. = DISTURBED AREA STABILIZATION

SEE LANDSCAPE/TREE PROTECTION PLANS FOR LEGEND SPECIFIC TO THOSE SHEETS



PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:

PANDA EXPRESS, INC.  
1683 HAINUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

| REVISION HISTORY |           |
|------------------|-----------|
| 1                | — — — — — |
| 2                | — — — — — |
| 3                | — — — — — |
| 4                | — — — — — |
| 5                | — — — — — |
| 6                | — — — — — |
| 7                | — — — — — |
| 8                | — — — — — |
| 9                | — — — — — |
| 10               | — — — — — |

THE CIVIL ENGINEER REGULARLY UPDATES ELECTRONIC FILES DURING THE DEVELOPMENT OF A PROJECT. AS A RESULT, THE DATA INCLUDED IN ANY CAD FILE OR DRAWING PRIOR TO ITS FINAL RELEASE DOES NOT NECESSARILY REFLECT THE COMPLETE SCOPE OR CONTENT AS DEFINED IN THE CONTRACT. THE CONTENTS IN THESE FILES MAY THEREFORE BE PRELIMINARY, INCOMPLETE WORK IN PROGRESS, AND SUBJECT TO CHANGE. FURTHERMORE, THE INFORMATION CONTAINED HEREIN IS THE EXCLUSIVE PROPERTY OF THE CIVIL ENGINEER. THE ORIGINAL IDEAS REPRESENTED HERE BY THIS INFORMATION SHALL NOT BE USED, ALTERED, OR REPRODUCED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT OF THE CIVIL ENGINEER. THESE PLANS ARE SUBJECT TO FEDERAL COPYRIGHT LAWS AND USE OF SAME WITHOUT EXPRESSED WRITTEN PERMISSION OF THE CIVIL ENGINEER IS PROHIBITED.

|            |                |
|------------|----------------|
| PROJ #     | 180050         |
| DWG NAME   | 180050 COL.DWG |
| ISSUE DATE | 11/30/2018     |
| PROJ TGR   | LJC            |

GENERAL NOTES

COL.1  
SHEET NUMBER

ISSUE FOR PERMIT



## LEGEND

|            |                                |
|------------|--------------------------------|
| ==ST==     | STORM SEWER LINE               |
| ---SA---   | SANITARY SEWER LINE            |
| ---OH---   | OVERHEAD UTILITIES             |
| ---W---    | WATER LINE                     |
| ---UGP---  | UNDERGROUND POWER              |
| ---UGT---  | UNDERGROUND TELEPHONE          |
| ---X---    | FENCE LINE                     |
| ---G---    | UNDERGROUND GAS LINE           |
| ---C---    | CATCH BASIN                    |
| ---D---    | STORM MANHOLE                  |
| ---CMP---  | CORRUGATED METAL PIPE          |
| ---RCP---  | REINFORCED CONCRETE PIPE       |
| ---PVC---  | POLYVINYL CHLORIDE PIPE        |
| ---HDPE--- | HIGH DENSITY POLYETHYLENE PIPE |
| ---A---    | ANCHOR WIRE                    |
| ---P---    | POWER POLE                     |
| ---L---    | LIGHT POLE                     |
| ---LL---   | LANDSCAPE LIGHT                |
| ---PE---   | POWER EQUIPMENT                |
| ---V---    | WATER VALVE                    |
| ---F---    | FIRE HYDRANT                   |
| ---M---    | WATER METER                    |
| ---G---    | GAS METER                      |
| ---V---    | GAS VALVE                      |
| ---SM---   | SANITARY MANHOLE               |
| ---CO---   | SANITARY CLEAN OUT             |
| ---S---    | SIGN                           |
| ---SH---   | EXISTING SHRUB                 |
| ---T---    | EXISTING TREE                  |

## UTILITY PROVIDERS

|                            |
|----------------------------|
| <b>ELECTRIC</b>            |
| NASHVILLE ELECTRIC SERVICE |
| 1214 CHURCH STREET         |
| NASHVILLE, TN 37230        |
| PHONE: (615) 736-6900      |
| <b>WATER</b>               |
| METRO WATER SERVICE        |
| 1616 3RD AVE, NORTH        |
| NASHVILLE, TN 37208        |
| PHONE: (615) 862-4598      |
| CRYSTAL GRIMES             |
| <b>SEWER</b>               |
| METRO WATER SERVICE        |
| 1616 3RD AVE, NORTH        |
| NASHVILLE, TN 37208        |
| PHONE: (615) 862-4598      |
| CRYSTAL GRIMES             |
| <b>GAS</b>                 |
| PIEDMONT NATURAL GAS       |
| 83 CENTURY BLVD.           |
| NASHVILLE, TN 37214        |
| (615) 456-5694             |
| CRAIG OWEN                 |
| <b>PHONE</b>               |
| AT & T                     |
| 231 6TH AVE                |
| NASHVILLE, TN 37243        |
| JOHN VAUGHN:               |
| (615) 893-9018             |
| JANE ANNE BROWN:           |
| (615) 214-7314             |

## SCHEDULE B EXCEPTIONS

- (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records. (Not a survey matter)
- Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land. (No documentation provided)
- Easements, liens or encumbrances, or claims thereof, not shown by the Public Records. (No documentation provided)
- Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records. (As shown on survey)
- Any mineral or mineral rights leased, granted or retained by current or prior owners. (Not a survey matter)
- Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing the public records or attaching subsequent to the effective date hereof, but prior to the date of recording of the interest of the insured. (No documentation provided)
- Any lien or right to lien for services, labor or material imposed by law and not shown by the public records. (Not a survey matter)
- No insurance is afforded as to the acreage or square footage contained in the insured property. (Acreage as shown on survey)
- Taxes and assessments for the year 2018 and subsequent years, not yet due and payable. (Not a survey matter)
- All matters shown on plat of record in Plat Book 4595, page 184, in the Register's Office of Davidson County, Tennessee. (As shown on survey)
- All matters shown on plat of record in Plat Book 5190, page 572, in the Register's Office of Davidson County, Tennessee. (As shown on survey)
- All matters shown on plat of record in Plat Book 5800, page 261, in the Register's Office of Davidson County, Tennessee. (As shown on survey)
- All matters shown on plat of record in Plat Book 5800, page 374, in the Register's Office of Davidson County, Tennessee. (As shown on survey)
- Rights of parties in possession not shown by the public record. (No documentation provided)

## LEGAL DESCRIPTIONS OF RECORD

Tract 1:

Land in Davidson County, Tennessee, being Lot No. 2, on the Plan of Parrish Commercial Park, Section 3, as shown on plat of record in Plat Book 4595, page 184, in the Register's Office of Davidson County, Tennessee, to which plat reference is hereby made for a more particular description.

Tract 2:

Land in Davidson County, Tennessee, being Lot No. 2, on the Resubdivision of Parcel 175 Lot No. 1, Parrish (Commercial) Park, Section 6, as shown on Plat of record in Plat Book 5190, page 572, in the Register's Office of Davidson County, Tennessee, to which plat reference is hereby made for a more particular description.

Tract 3:

Land in Davidson County, Tennessee, being Lot No. 1, on the Plan of Parrish Commercial Park, Section 13, as shown on plat of record in Plat Book 5800, page 261, and being Lot No. 1, on the Plan of Parrish Commercial Park, Section 14, of record in Plat Book 5800, page 374, in the Register's Office of Davidson County, Tennessee. Reference is hereby made to said Plats for a more particular description of each lot.

Being the same property conveyed to First Tennessee Bank National Association, a national banking association from The Trader's Post, Inc., a Tennessee corporation by Warranty Deed of record in Instrument No. 200311180168388, in the Register's Office for Davidson County, Tennessee.

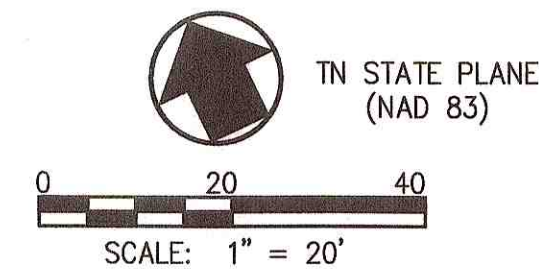
## SURVEYOR'S CERTIFICATE

To Panda Restaurant Group, Inc.; CFT NV Developments, LLC; Cheryn Family Trust dated October 30, 1987, as amended; Panda Express, Inc., and their affiliated entities, successors and assigns; First American Title Insurance Company;

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 6a, 6b, 7a, 8, 9, 11, 13, 14, 16, 17, 18, 19 and 20 of Table A thereof. The field work was completed on July 10, 2018.

Robert G. Lusby, Jr., RLS #1332

9-10-2018  
Date

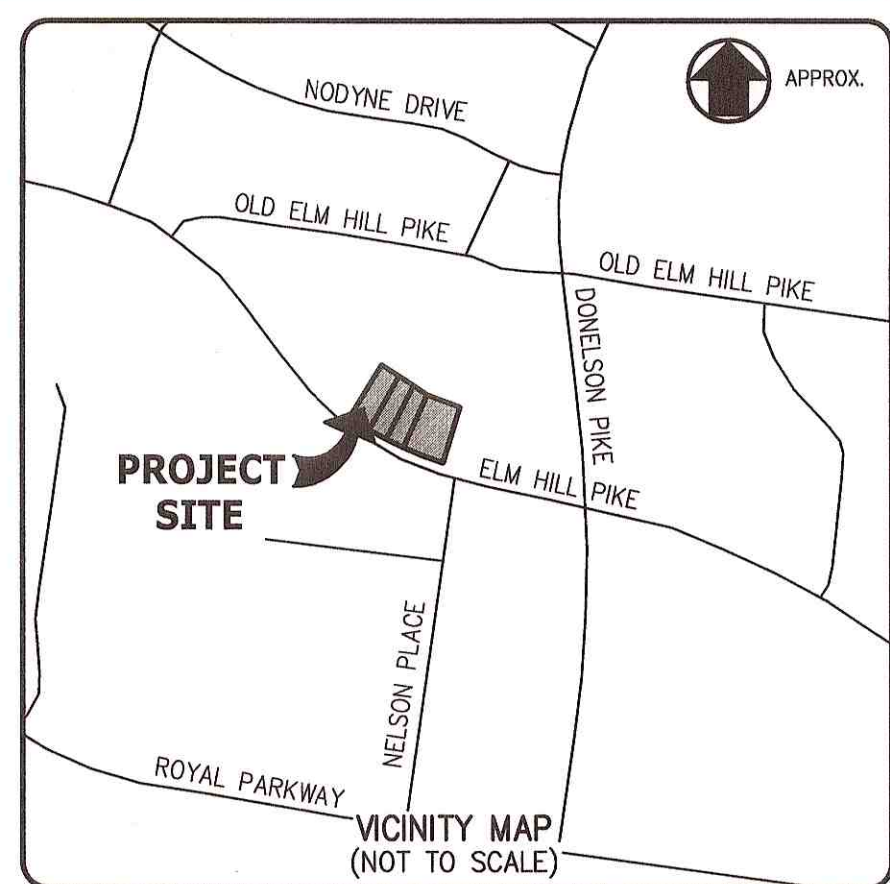


## CONTROL POINT DATA

CONTROL PT# 1  
SET LARGE SPIKE  
N 661633.64  
E 1771225.09  
EL. 531.59

CONTROL PT# 2  
SET MAGNETIC NAIL AND DISC  
N 661771.95  
E 1771398.32  
EL. 529.91

CONTROL PT# 3  
SET MAGNETIC NAIL AND DISC  
N 661848.08  
E 1771210.37  
EL. 529.37

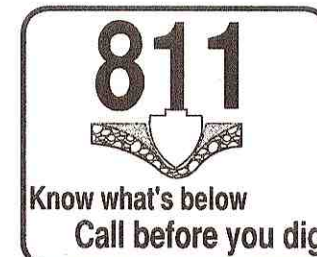


## NOTES:

- OWNERSHIP AND REFERENCE  
PARISH COMMERCIAL PARK  
FIRST TENNESSEE BANK NATIONAL ASSOCIATION  
1755 LYNNVILLE STREET, BUILDING D  
MEMPHIS, TN 38119-7243  
PARCEL ID 096-13-0-173.00  
DEED REFERENCE: INSTRUMENT NO. 200311180168388  
PLAT REFERENCE: LOT 2 PARRISH COMMERCIAL PARK  
SECTION 3, PLAT BOOK 4595, PAGE 184  
PARCEL ID 096-13-0-194.00  
DEED REFERENCE: INSTRUMENT NO. 200311180168388  
PLAT REFERENCE: LOT 2 RESUBDIVISION OF LOT 1 OF  
PARRISH COMMERCIAL PARK SECTION 6  
PLAT BOOK 5190, PAGE 572  
PARCEL ID 096-13-0-202.00  
DEED REFERENCE: INSTRUMENT NO. 200311180168388  
PLAT REFERENCE: LOT 1 PARRISH COMMERCIAL PARK  
SECTION 13, PLAT BOOK 5800, PAGE 374  
PARCEL ID 096-13-0-204.00  
DEED REFERENCE: INSTRUMENT NO. 200311180168388  
PLAT REFERENCE: LOT 1 PARRISH COMMERCIAL PARK  
SECTION 14, PLAT BOOK 5800, PAGE 374
- TOTAL AREA: 38,708.83 S.F. / 0.889 AC.
- DATE OF FIELD SURVEY: JULY 10, 2018
- SUBJECT PROPERTY LIES OUTSIDE THE 100 YEAR FLOODWAY WITHIN ZONE X PER FIRM MAPPING OF DAVIDSON COUNTY, TN. COMMUNITY PANEL NO: 4703700268H DATED 4/05/2017.
- ABOVE GROUND AND UNDERGROUND UTILITIES AS SHOWN WERE LOCATED FROM VISIBLE FIELD EVIDENCE. UTILITY MARKINGS AND/OR DRAWINGS BY OTHERS. VERIFICATION AS TO EXISTENCE, LOCATION, SIZE, MATERIAL AND DEPTH SHOULD BE PURSUED PRIOR TO ANY DECISIONS BEING MADE RELATIVE TO UTILITIES. TO AVOID CONFLICTS AND/OR HAZARDS, NOTIFY TENNESSEE ONE CALL AT 811 PRIOR TO ANY EXCAVATION OR GRADING ACTIVITIES.
- ZONING CLASSIFICATION: COMMERCIAL SERVICE DISTRICT SETBACKS: FRONT = 15', SIDE = 0', REAR = 20' BUILDING HEIGHT AT SETBACK LINE = 30'
- THERE ARE 29 PARKING SPACES ON THE SUBJECT PROPERTY INCLUDING 2 HANDICAPPED PARKING SPACES.
- FIRST AMERICAN TITLE COMPANY COMMITMENT FOR TITLE INSURANCE PROVIDED TO CANNON & CANNON, INC. BY CLIENT. REFERENCE TITLE COMMITMENT #NCS-903594-NAS WITH AN EFFECTIVE DATE OF MAY 4, 2018 AT 8:00AM. THIS SURVEY IS THE SAME PROPERTY AS DESCRIBED IN THE TITLE COMMITMENT PROVIDED TO CANNON & CANNON, INC.
- NO VISIBLE EVIDENCE OF THE SUBJECT TRACT BEING USED AS A SOLID WASTE DUMP, SUMP OR SANITARY.
- NO BUILDING CONSTRUCTION OR BUILDING ADDITIONS.
- NO WETLAND AREAS DELINEATED ON THE SUBJECT PROPERTY.

|   |  |
|---|--|
| REVISIONS   | DATE   |
| <b>CANNON &amp; CANNON INC</b><br>CONSULTING ENGINEERS - FIELD SURVEYORS<br>TEL: 865.670.8555    8550 Kingston Pike<br>WWW.CANNON-CANNON.COM    Knoxville, TN 37819 |  |
| CLIENT:   | <b>INGENIUM ENTERPRISES, INC.</b><br>221 ROSWELL STREET, SUITE 100<br>ALPHARETTA, GA 30022<br>(770) 437-8850 |
| <b>PANDA EXPRESS - MURFREESBORO, TN</b><br>2740, 2738, 2736 & 2732 ELM HILL PIKE<br>NASHVILLE, TENNESSEE 37214-3137<br>DISTRICT 15, DAVIDSON COUNTY, TN             |  |
| <b>ALTA / NSPS LAND TITLE SURVEY</b>  |  |
| CCI PROJECT NO.   | 01116-0007   |
| DRAWING DATE  | SEPTEMBER 6, 2018  |
| PN  | RGL  |
| PC  | TJ   |
| DRAWN   | JDW  |
| FR  | TJ   |
| <br><b>1116-07</b><br>Tenn. Reg. No. 1332   |  |

| CURVE TABLE |             |         |         |         |                       |
|-------------|-------------|---------|---------|---------|-----------------------|
| CURVE       | DELTA ANGLE | RADIUS  | TANGENT | LENGTH  | CHORD                 |
| C1          | 6°49'48"    | 914.93' | 54.60'  | 109.08' | N 69°15'30" W 109.00' |
| C2          | 3°08'00"    | 914.93' | 25.02'  | 50.04'  | N 64°32'19" W 50.03'  |
| C3          | 3°08'30"    | 914.93' | 25.09'  | 50.17'  | N 61°15'10" W 50.16'  |
| C4          | 3°46'22"    | 914.93' | 30.13'  | 60.25'  | N 57°47'44" W 60.23'  |

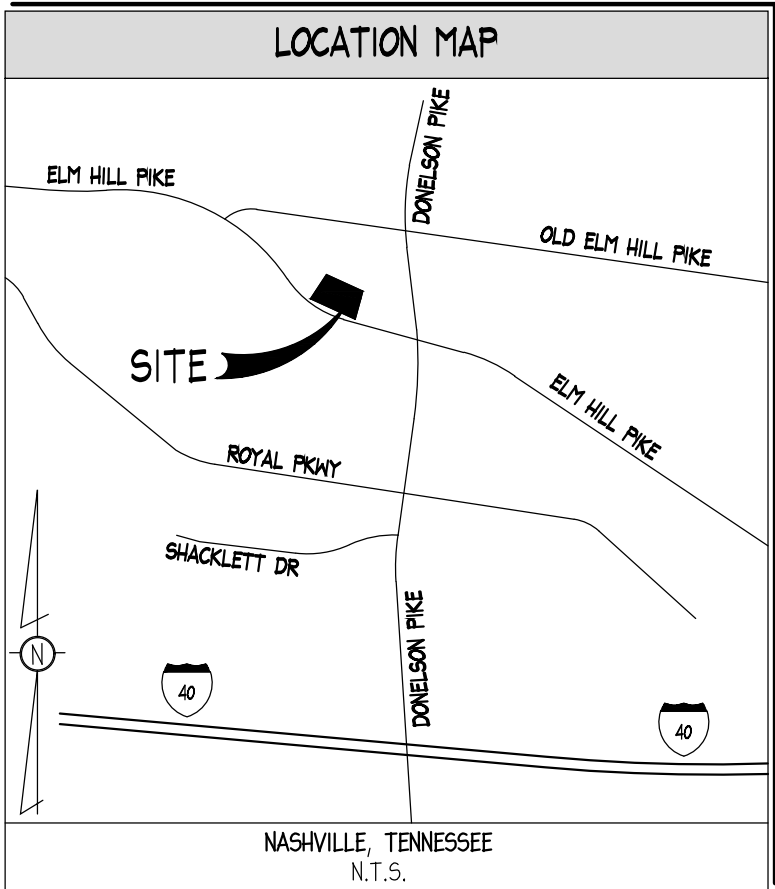
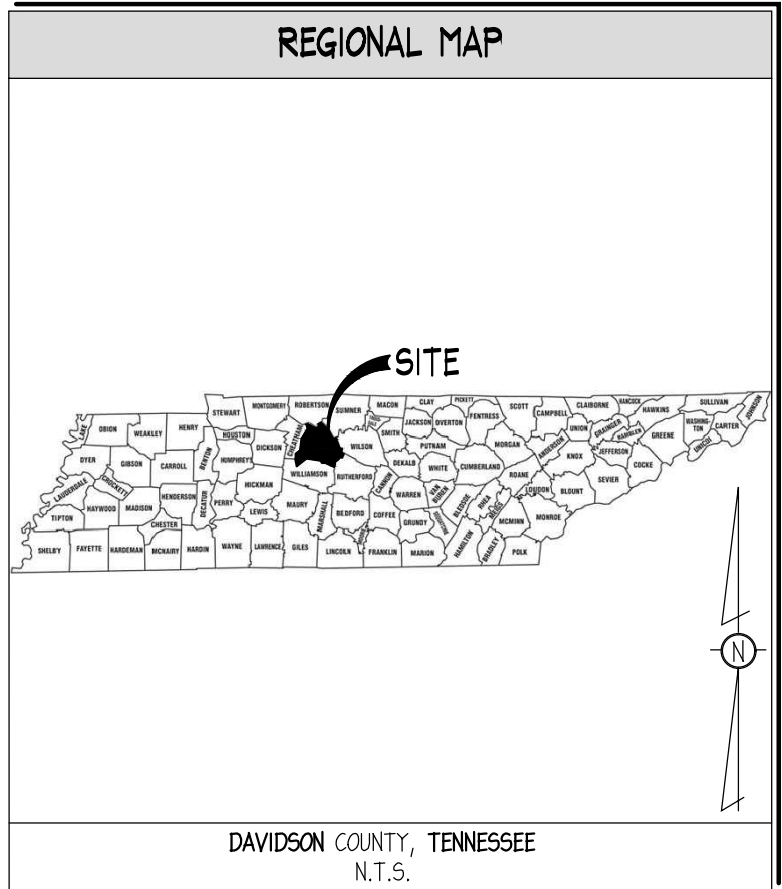


## CERTIFICATE OF CLASS AND ACCURACY OF SURVEY

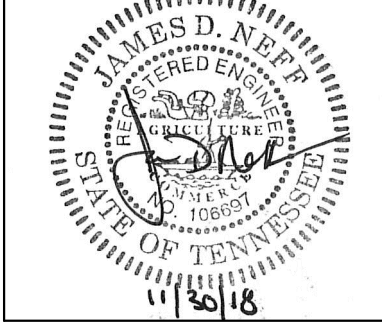
I hereby certify that this is a category 1 survey and the ratio of precision of the unadjusted survey is not less than 1:15,000 as shown thereon.

Tenn. Reg. No. 1332





14499 N DALE HARRY HWY  
SUITE 250  
TAMPA, FL 33618  
813.367.0084  
INGENIUMTAMPA.COM



### DEMOLITION LEGEND

- PROTECT ALL ITEMS DURING ALL PHASES OF CONSTRUCTION (SEE GENERAL DEMOLITION NOTE #1). THE CONTRACTOR SHALL ENSURE THE INTEGRITY OF ALL ITEMS DENOTED TO BE PROTECTED THAT ARE ADJACENT TO ITEMS DENOTED TO BE DEMOLISHED AND WILL SAFELY REPAIR ANY SUCH ITEMS TO THE REQUIRED JURISDICTIONAL STANDARDS.
- SAW-CUT AND REMOVE EXISTING SIDEWALK, CURB AND GUTTER, DUMPSTER PAD, AND ASSOCIATED APPURTENANCES INCLUDING, BUT NOT LIMITED TO, REINFORCEMENT AND STONE BASE.
- REMOVE EXISTING BUILDING AND ASSOCIATED APPURTENANCES INCLUDING, BUT NOT LIMITED TO, LANDSCAPING, WALLS, AWNINGS, CANOPY, ROOF, ROOF-TOP MECHANICAL EQUIPMENT, DRIVE-THRU EQUIPMENT, FOUNDATION, FOOTINGS, UTILITIES WITHIN SLAB, FRENCH DRAINS, STEPS/STAIRS, CONCRETE PARKING AND STONE BASE.
- REMOVE EXISTING ASPHALT AND ASSOCIATED APPURTENANCES INCLUDING, BUT LIMITED TO, REINFORCEMENT AND STONE BASE.
- REMOVE EXISTING GAS LINE TO WITHIN 5' OF THE PROPOSED PROPERTY LINE AND METER AT BUILDING. SEE GENERAL DEMOLITION NOTE #3.
- REMOVE EXISTING STORY DRAIN STRUCTURES AND ALL ASSOCIATED APPURTENANCES INCLUDING PIPES. SEE GENERAL DEMOLITION NOTE #3.
- REMOVE EXISTING UNDERGROUND TELEPHONE LINE TO WITHIN 5' OF THE PROPOSED PROPERTY LINE. SEE GENERAL DEMOLITION NOTE #3.
- REMOVE EXISTING WATER LINE TO WITHIN 5' OF THE PROPOSED PROPERTY LINE. SEE GENERAL DEMOLITION NOTE #3.
- REMOVE EXISTING UNDERGROUND ELECTRIC LINE TO WITHIN 5' OF THE PROPOSED PROPERTY LINE AND ANY POWER POLES AND/OR LIGHT POLES. SEE GENERAL DEMOLITION NOTE #3.
- REMOVE EXISTING SANITARY SEWER STRUCTURES AND ALL ASSOCIATED APPURTENANCES INCLUDING PIPES. SEE GENERAL DEMOLITION NOTE #3.
- REMOVE EXISTING BENCH AND ANY ASSOCIATED APPURTENANCES.
- REMOVE EXISTING LANDSCAPING AROUND BUILDING. REMOVE EXISTING ON-SITE TREES AND SHRUBS, INCLUDING ALL STUMPS & ROOTS. TAKE CARE TO NOT DAMAGE NEIGHBORING PROPERTIES.
- EXISTING INTERIOR PROPERTY LINES ARE BEING VACATED. SITE WILL BE COMBINED INTO A SINGLE PROPERTY.

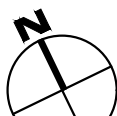
### GENERAL DEMOLITION NOTES

- ALL ITEMS TO BE PROTECTED SHALL BE PROTECTED THROUGH ALL THE PHASES OF CONSTRUCTION UNTIL FINAL ACCEPTANCE BY CITY OF NASHVILLE/DAVIDSON COUNTY IS RECEIVED.
- CONTRACTOR TO COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS WITH ALL DEMOLITION ACTIVITIES. IF ADDITIONAL REQUIREMENTS ARE REQUIRED FOR HAZARDOUS WASTE REMOVAL INCLUDING BUT NOT LIMITED TO ASBESTOS, SEPTIC FIELDS, LEAD, PCB, TCE, OR OTHER WASTE OR CONTAMINANT, IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH MANDATES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CONTRACTORS SHALL COORDINATE WITH ALL UTILITY COMPANIES CONCERNING THE ABANDONMENT, RELOCATION AND/OR DEMOLITION OF UTILITIES PRIOR TO CONSTRUCTION. NO WORK IS TO BE PERFORMED ON LIVE LINES UNLESS APPROVED IN WRITING BY THE UTILITY IN ALL CASES. A REPRESENTATIVE FROM THE UTILITY SHALL BE PRESENT FOR INITIAL ABANDONMENT AND/OR LIVE CUTS. CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR UTILITIES AND SHALL PROTECT THEM AT ALL TIMES.
- CONTRACTOR IS RESPONSIBLE FOR PROCUREMENT OF ALL NECESSARY PERMITS.
- DEMOLITION SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, HAULING, PERMITTING, FEES, AND COORDINATION WITH PUBLIC AND/OR PRIVATE UTILITY REQUIRED TO REMOVE AND PROPERLY DISPOSE OF ANY ITEM NECESSARY TO PERFORM THE REQUIRED DEMOLITION AS INDICATED ON THE PLANS.
- RELOCATION SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, HAULING, PERMITTING, FEES, AND COORDINATION WITH PUBLIC AND/OR PRIVATE UTILITY REQUIRED TO REMOVE, RELOCATE, AND INSTALL NEW ITEMS AS INDICATED ON THE PLANS.
- ABANDONMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, PERMITTING, FEES, AND COORDINATION WITH PUBLIC AND/OR PRIVATE UTILITY REQUIRED TO ADEQUATELY ABANDON ITEMS AS INDICATED ON THE PLANS.
- THE CONTRACTOR SHALL COORDINATE ALL TREE AND LANDSCAPE REMOVAL WITH THE LANDSCAPE PLANS. ANY DISCREPANCY BETWEEN THIS DEMOLITION PLAN AND THE LANDSCAPE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER IMMEDIATELY.
- THE CONTRACTOR IS FULLY AND COMPLETELY RESPONSIBLE FOR LOCATION, VERIFICATION, PROTECTION, STORAGE, MAINTENANCE, DEMOLITION, REMOVAL, RELOCATION OR ALTERATION OF ALL EXISTING SITE UTILITIES, SITE IMPROVEMENTS, STRUCTURES, OR CONSTRUCTION ELEMENTS AS REQUIRED TO COMPLETE THE WORK THAT ARE SHOWN ON THE PLANS AND OR THAT ARE OBSERVABLE IN THE FIELD, WHETHER CONSPICUOUSLY VISIBLE OR NOT. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME THOROUGHLY FAMILIAR WITH ALL EXISTING IMPROVEMENTS, UTILITIES, AND SITE CONDITIONS PRIOR TO BIDDING AND CONSTRUCTION.
- THIS DEMOLITION PLAN IS FOR GRAPHICAL REFERENCE ONLY. ITEMS NOT DEPICTED ON THESE PLANS MAY BE REQUIRED TO BE PROTECTED, REMOVED, OR RELOCATED. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING THE LOCATIONS OF ALL EXISTING STRUCTURES, UTILITIES, AND APPURTENANCES WITHIN THE LIMITS OF CONSTRUCTION. DEMOLITION INCLUDES BUT IS NOT LIMITED TO THE ITEMS SHOWN ON THIS PLAN.
- THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR ANY EXISTING UNDERGROUND OR OVERHEAD UTILITIES.
- SAW-CUT DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD STAKE AND CONSULT ENGINEER TO VERIFY PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL PROTECT ALL ITEMS  
OUTSIDE LIMITS OF CONSTRUCTION UNLESS  
OTHERWISE NOTED IN THE CONSTRUCTION  
PLANS OR SPECIFICATIONS.

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING  
UTILITIES (LOCATIONS AND ELEVATIONS) PRIOR TO  
STARTING CONSTRUCTION AND ALERT ENGINEER TO  
ANY DISCREPANCIES IMMEDIATELY.

24-HOUR CONTACT:  
CLAY WORTHY  
602-931-6540



0 20 40 Feet

















PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:

PANDA EXPRESS, INC.  
1683 HAZEL GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

### REVISION HISTORY

|   |            |   |            |
|---|------------|---|------------|
|  | --/--/---- |  | --/--/---- |
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|  | --/--/---- |  | --/--/---- |

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SAME WITHOUT EXPRESSED WRITTEN PERMISSION OF  
THE CIVIL ENGINEER IS PROHIBITED.

PROJ # 180050  
DWG NAME 180050 CO2.DWG  
ISSUE DATE 11/30/2018  
PROJ FIRM LLC

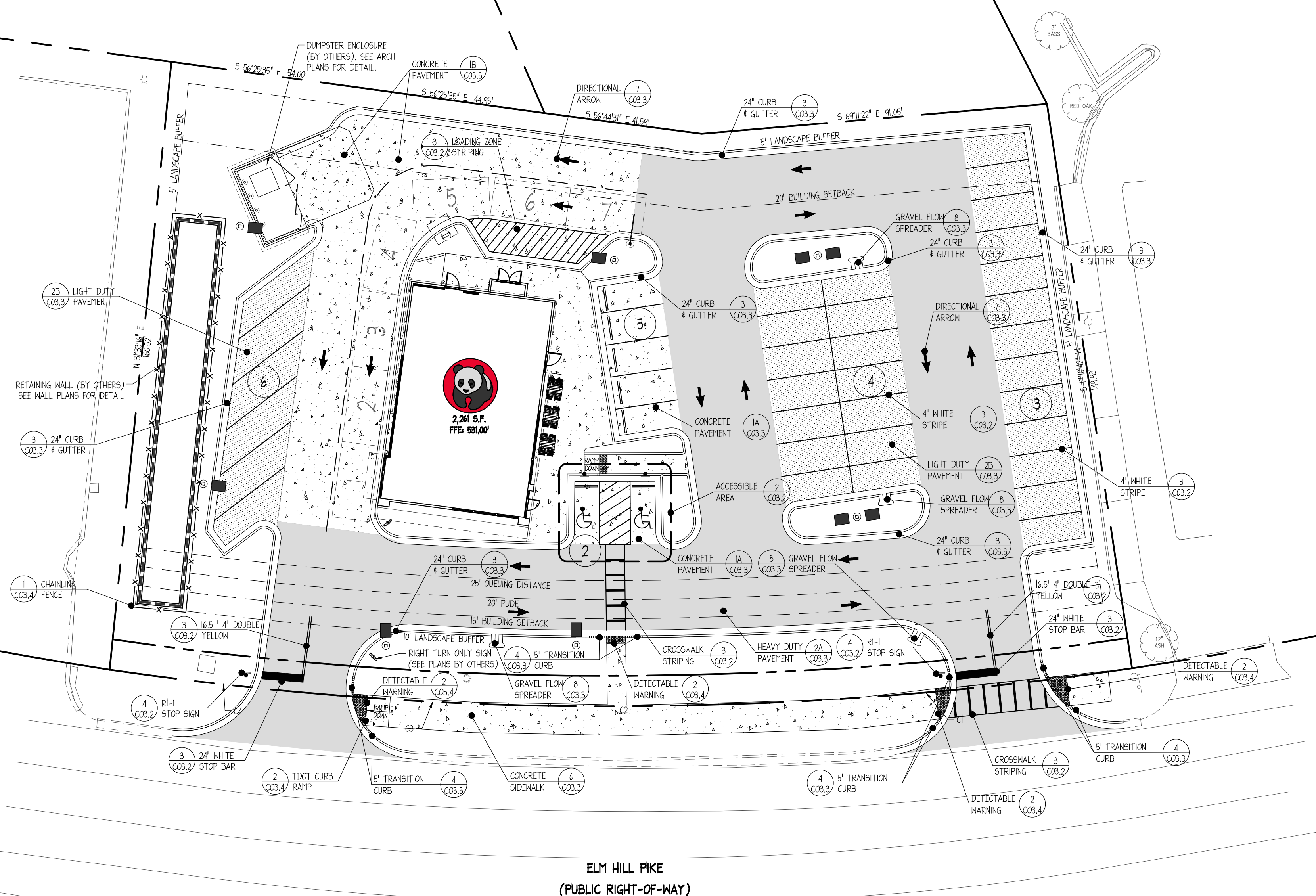
### DEMOLITION PLAN

CO2.1

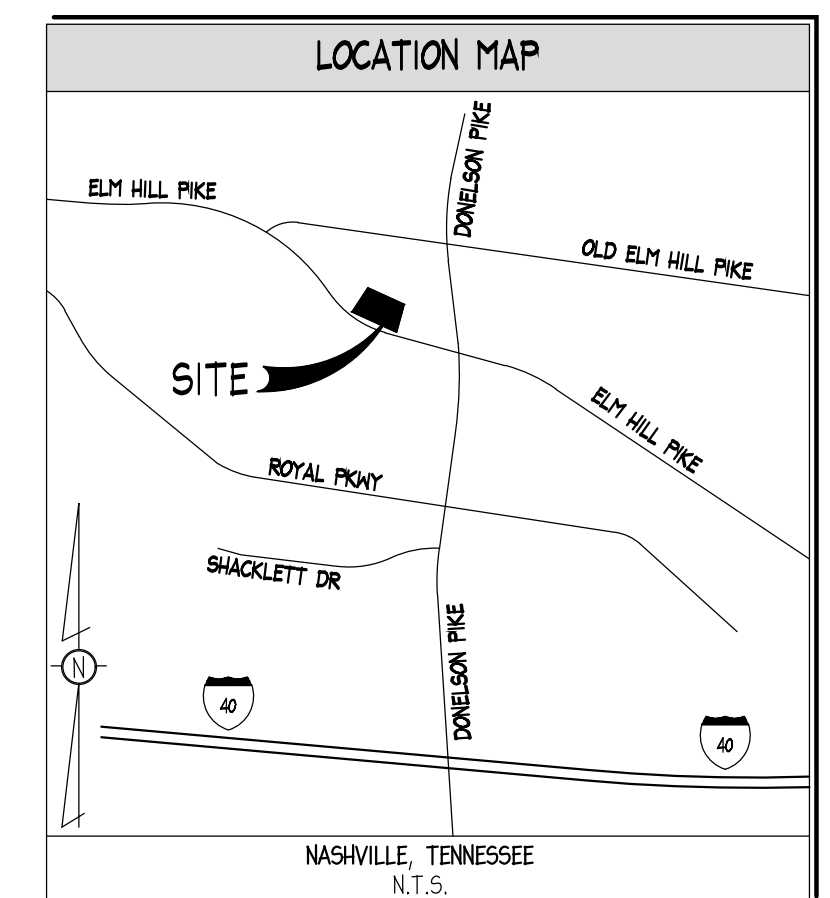
SHEET NUMBER

ISSUE FOR PERMIT





- PAVING LEGEND**
- HEAVY DUTY PAVEMENT SECTION:  
DETAIL 2A, SHEET C03.3
  - LIGHT DUTY PAVEMENT SECTION:  
DETAIL 2B, SHEET C03.3
  - CONCRETE SECTIONS:  
SIDEWALK: DETAIL 6, SHEET C03.3  
DRIVE-THRU AND DUMPSTER APPROACH PAD:  
DETAIL 1, TYPE B, SHEET C03.3  
PARKING: DETAIL 1, TYPE A, SHEET C03.3



- SITE NOTES**
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING IMPROVEMENTS AND TREES AND OTHER DEBRIS WITHIN THE LIMITS OF THE WORK FROM THE SITE. ON SITE BURIAL OF TREES AND OTHER DEBRIS WILL NOT BE ALLOWED. THERE ARE NO KNOWN INERT BURY PITS ON THE SITE AND NONE WILL BE ALLOWED DURING CONSTRUCTION OF THE PROJECT.
  - ALL WORK SHALL COMPLY WITH NASHVILLE/DAVIDSON COUNTY, STATE OF TENNESSEE, AND FEDERAL CODES AND ALL NECESSARY LICENSES AND PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT HIS EXPENSE UNLESS PREVIOUSLY OBTAINED BY THE OWNER.
  - ALL WORK SHALL BE PERFORMED IN A FINISHED AND WORKMANLIKE MANNER TO THE ENTIRE SATISFACTION OF THE OWNER, AND IN ACCORDANCE WITH THE BEST RECOGNIZED TRADE PRACTICES.
  - ALL MATERIALS SHALL BE NEW UNLESS USED OR SALVAGED MATERIALS ARE AUTHORIZED BY THE OWNER PRIOR TO USE.
  - ALL WORK PERFORMED ON CITY, COUNTY, AND/OR STATE OR FEDERAL RIGHT-OF-WAY SHALL BE IN STRICT CONFORMANCE WITH APPLICABLE STANDARDS AND SPECIFICATIONS OF THE APPROPRIATE GOVERNING AGENCIES.
  - BASE COURSE MATERIALS, EQUIPMENT, METHODS OF CONSTRUCTION AND WORKMANSHIP SHALL CONFORM TO "STATE OF TENNESSEE" TRANSPORTATION STANDARD SPECIFICATIONS, CURRENT EDITION.
  - ALL BUILDING DIMENSIONS SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL PLANS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
  - PHOTOMETRICS DESIGNED BY OTHERS. POLE LOCATIONS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY FINAL LOCATION OF POLES WITH PHOTOMETRIC PLAN AND OWNER PRIOR TO CONSTRUCTION.
  - SEE SHEET C01 FOR GENERAL NOTES.
- BUILDING AREA NOTES**
- MAINTAIN ACCESS FOR EMERGENCY VEHICLES AROUND AND TO ALL BUILDINGS UNDER CONSTRUCTION. I.E. IN TIMES OF RAIN OR FLOOD, ROADS SHALL BE PASSABLE TO EMERGENCY VEHICLES BY BEING PAVED OR HAVING A CRUSHED STONE BASE ETC., WITH A MINIMUM WIDTH OF 20 FEET. THE ACCESS TO BUILDINGS HAVING SPRINKLER OR STANDPIPE SYSTEMS SHALL BE TO WITHIN 40 FEET OF THE FIRE DEPARTMENT CONNECTION (NFPA 141 3-1).
  - CONTRACTOR TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING IN ALL AREAS AROUND BUILDING. INSTALL FRENCH DRAIN IN LANDSCAPED AREAS ADJACENT TO BUILDING AND CONNECT TO DRAINAGE SYSTEM.
  - SEE SHEET C01 FOR GENERAL NOTES.

**SITE INFORMATION**

JURISDICTION: NASHVILLE, TENNESSEE  
DAVIDSON COUNTY

ZONING: C5 (COMMERCIAL SERVICE)

**REQUIRED BUILDING SETBACKS:**  
FRONT: 15'  
SIDE: NONE  
SIDE: NONE  
REAR: 20'

**REQUIRED PARKING:**  
1 SPACE IS REQUIRED PER 100 SF OF GROSS FLOOR AREA (GFA) OF THE BUILDING. ASSUMING A 2,264 SF BUILDING, 23 SPACES ARE REQUIRED.

**PROPOSED PARKING:**  
8.5' X 18' (REGULAR) = 36  
8' X 18' (CL) = 2  
TOTAL = 40

**DRIVE AISLE: 24'**

**SITE AREA CALCULATIONS:**  
SITE: ±0.84 AC.  
PERVIOUS AREA: ±0.21 AC. (±25.2%)  
IMPERVIOUS AREA: ±0.63 AC. (±74.8%)  
DISTURBED AREA: ±0.98 AC.

**FLOOD HAZARD:**  
NO PORTION OF THIS PROPERTY IS LOCATED IN A SPECIAL FLOOD AREA AS PER F.I.R.P. MAP NO. 47037C026H, DATED 04/05/2017.

**EXISTING INFORMATION:**  
PROVIDED BY CANNON & CANNON, INC., DATED 10/01/2016 (SEE SHEET C02.0).

CONTRACTOR SHALL COORDINATE AND VERIFY LOCATION OF ALL SIGNAGE WITH OWNER PRIOR TO CONSTRUCTION.

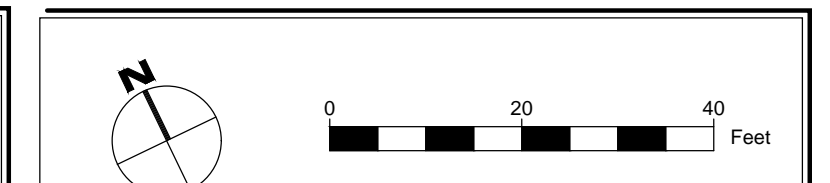
CONTRACTOR SHALL COORDINATE AND ADJUST LOCATION OF LOOP DETECTORS TO AVOID UTILITY CONFLICTS PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL INSTALL GENERAL UTILITY CONDUITS TO PLANTERS AROUND BUILDING AND PATIO. SEE ARCHITECTURAL/MEP PLANS FOR CONTINUATION.

CONTRACTOR SHALL PROTECT ALL ITEMS OUTSIDE LIMITS OF CONSTRUCTION UNLESS OTHERWISE NOTED IN THE CONSTRUCTION PLANS OR SPECIFICATIONS.

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES (LOCATIONS AND ELEVATIONS) PRIOR TO STARTING CONSTRUCTION AND ALERT ENGINEER TO ANY DISCREPANCIES IMMEDIATELY.

24-HOUR CONTACT:  
CLAY WORTHY  
602-931-6540



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SUITE 250  
TAMPA, FL 33618  
813.367.0084  
INGENIUM@INGENIUMENTERPRISES.COM

PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE

CLIENT:

PANDA EXPRESS, INC.  
1683 HAINUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

| REVISION HISTORY |       |
|------------------|-------|
| 1                | ISSUE |
| 2                | ISSUE |
| 3                | ISSUE |
| 4                | ISSUE |
| 5                | ISSUE |
| 6                | ISSUE |
| 7                | ISSUE |
| 8                | ISSUE |
| 9                | ISSUE |
| 10               | ISSUE |

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|            |                |
|------------|----------------|
| PROJ #     | 180050         |
| DWG NAME   | 180050 C03.DWG |
| ISSUE DATE | 11/30/2018     |
| PROJ TGR   | LLC            |

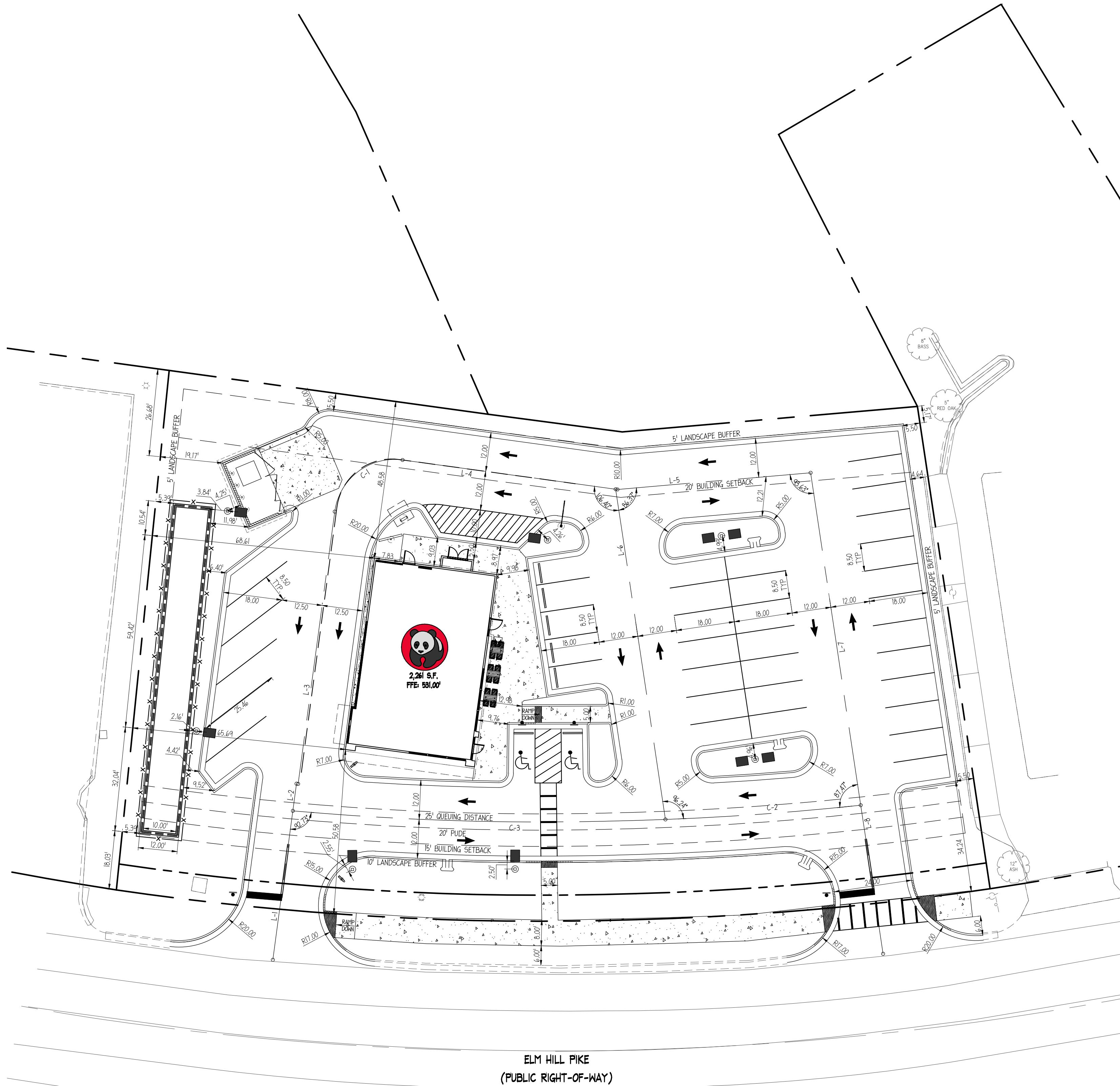
SITE PLAN

C03.0

SHEET NUMBER

ISSUE FOR PERMIT



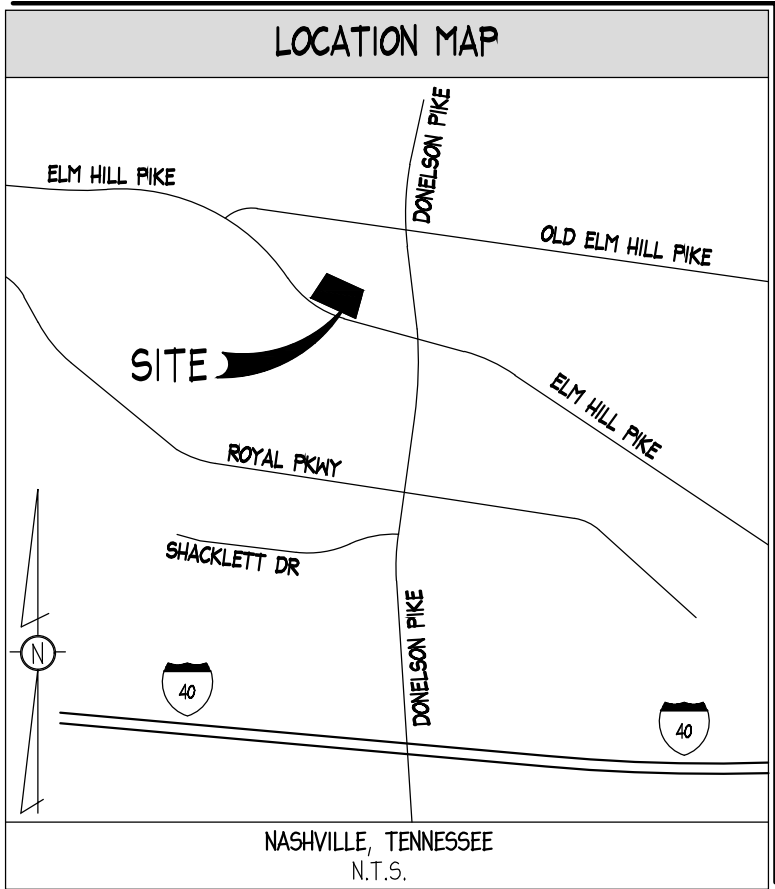


| LINE TABLE |         |              |                       |                       |
|------------|---------|--------------|-----------------------|-----------------------|
| LINE #     | LENGTH  | DIRECTION    | START POINT           | END POINT             |
| L-1        | 54.63'  | S33°24'02\"W | 1771206.46, 661766.64 | 1771176.39, 661721.04 |
| L-2        | 54.63'  | S33°24'02\"W | 1771206.46, 661766.64 | 1771176.39, 661721.04 |
| L-3        | 84.47'  | N33°24'02\"E | 1771206.86, 661766.37 | 1771253.37, 661836.88 |
| L-4        | 66.67'  | S56°25'35\"E | 1771279.05, 661842.11 | 1771334.60, 661805.24 |
| L-5        | 59.59'  | N6°11'22\"W  | 1771340.29, 661784.08 | 1771334.60, 661805.24 |
| L-6        | 102.45' | S17°10'42\"W | 1771334.13, 661805.55 | 1771303.81, 661707.48 |
| L-7        | 103.34' | N17°10'42\"E | 1771359.77, 661805.34 | 1771340.29, 661784.08 |
| L-8        | 46.19'  | N17°10'42\"E | 1771346.13, 661841.22 | 1771359.77, 661805.34 |

| CURVE TABLE |        |         |         |              |
|-------------|--------|---------|---------|--------------|
| CURVE #     | LENGTH | RADIUS  | DELTA   | CHORD LENGTH |
| C-1         | 29.12' | 18.50'  | 90.1730 | 26.20'       |
| C-2         | 60.19' | 884.43' | 3.8992  | 60.18'       |
| C-3         | 48.40' | 884.43' | 3.1954  | 48.39'       |

STAKING NOTES

1. ALL RADII ARE 3.0' UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE MEASURED TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS PERTAINING TO LIGHT POLES ARE MEASURED FROM THE CENTER OF THE POLE TO THE FACE OF CURB.
4. SEE SHEET C01 FOR GENERAL NOTES.
5. ALL DIMENSIONS TO PROPERTY LINE ARE PERPENDICULAR TO PROPERTY LINE.



SITE INFORMATION

JURISDICTION: NASHVILLE, TENNESSEE  
DAVIDSON COUNTY

ZONING: C5 (COMMERCIAL SERVICE)

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SIDE: NONE  
REAR: 20'

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SITE: ±0.84 AC.  
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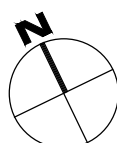
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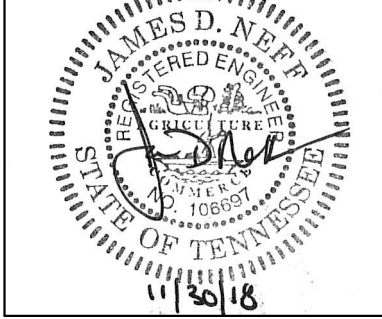
24-HOUR CONTACT:  
CLAY WORTHY  
602-931-6540



0 20 40 Feet



1449 N DALE HARRY HWY  
SUITE 250  
TAMPA, FL 33618  
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PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:

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1683 WALNUT GROVE AVENUE  
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REVISION HISTORY

|    |            |       |
|----|------------|-------|
| 1  | 11/30/2018 | ISSUE |
| 2  | 11/30/2018 | ISSUE |
| 3  | 11/30/2018 | ISSUE |
| 4  | 11/30/2018 | ISSUE |
| 5  | 11/30/2018 | ISSUE |
| 6  | 11/30/2018 | ISSUE |
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| PROJ #     | 180050         |
| DWG NAME   | 180050 C03.DWG |
| ISSUE DATE | 11/30/2018     |
| PROJ FIRM  | LLC            |

STAKING PLAN

C03.1

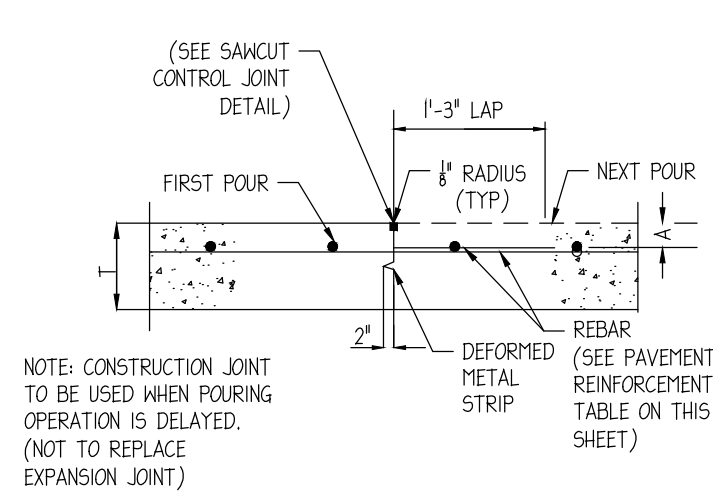
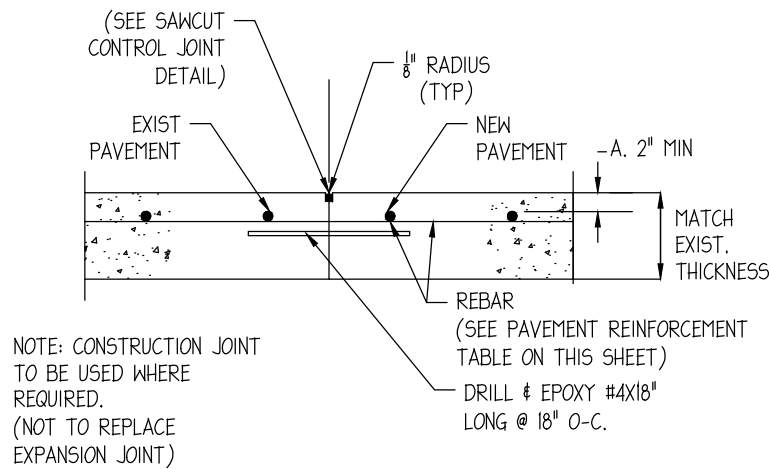
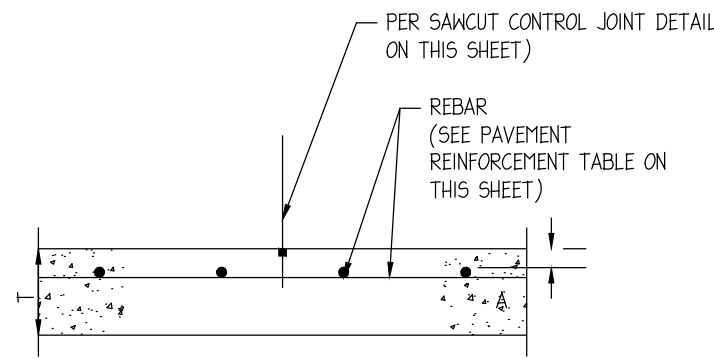
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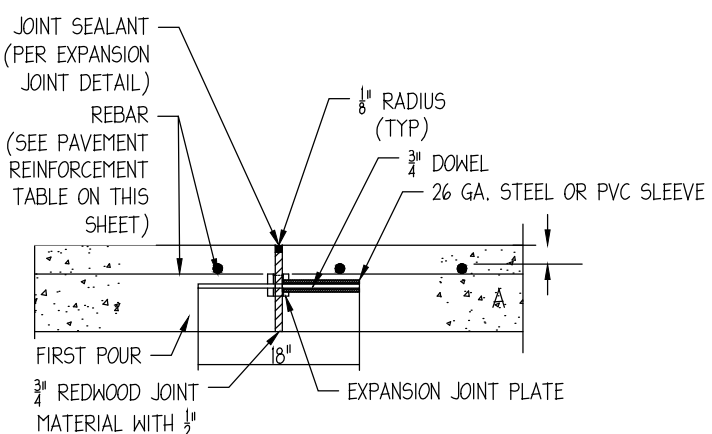




SAWCUT JOINT  
N.T.S.

CONCRETE TO CONCRETE TIE IN  
N.T.S.

CONSTRUCTION JOINT  
N.T.S.



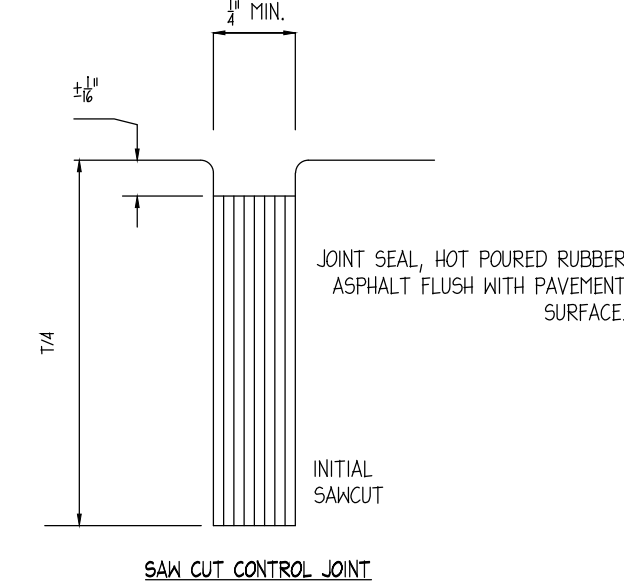
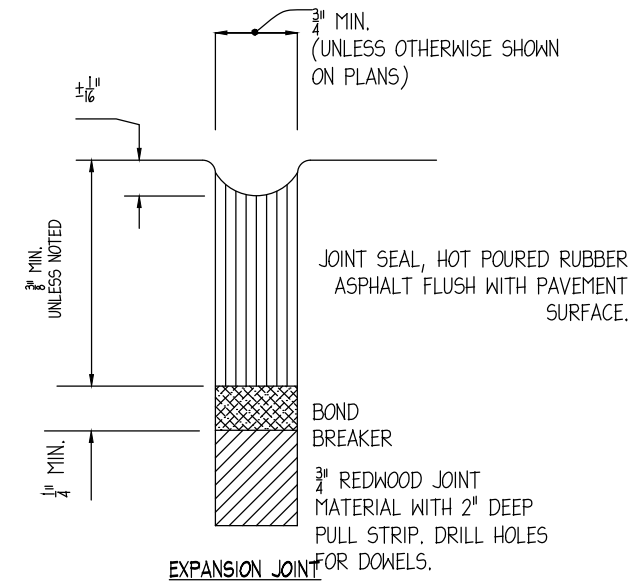
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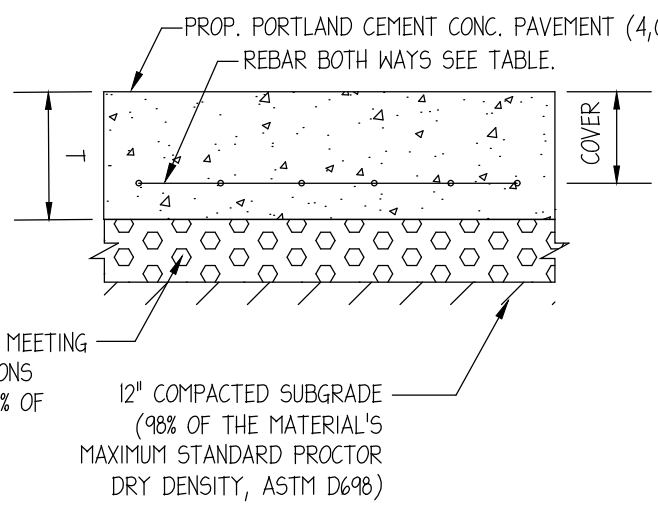
#### NOTES:

1. REINFORCING STEEL BAR SIZE/SPACING SPECIFICATIONS IN GEOTECH REPORT SHALL SUPERSEDE ABOVE TABLE.
2. REINFORCING STEEL SIZE/SPACING IS BASED ON MIN. 60,000 PSI TENSILE STRENGTH REINFORCING STEEL AS SHOWN.
3. CONCRETE PAVING MIX DESIGN SHALL HAVE MINIMUM 4000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. GEOTECHNICAL REPORT CONCRETE PAVING MIX DESIGN SHALL SUPERSEDE VALUES HEREIN.
4. MAXIMUM JOINT SPACING SHALL BE PER JOINT LAYOUT PLAN (IF PROVIDED) BUT SHALL NOT EXCEED VALUES IN TABLE.
5. MAXIMUM JOINT SPACING IN GEOTECHNICAL REPORT SHALL SUPERSEDE VALUES IN ABOVE TABLE.
6. USE STATE DOT SUBBASE UNLESS OTHERWISE SPECIFIED BY GEOTECHNICAL REPORT.
7. ALL JOINTS IN PAVING SHALL BE REFLECTED IN CURBING AND SHALL HAVE ALL THEIR RESPECTIVE JOINTING MATERIALS PRESENT (I.E. EXPANSION JOINTS SHALL HAVE THEIR RESPECTIVE FILLER BOARD AND CAULK REPLACED).
8. CURB EXPANSION JOINTS - IF THERE IS AN EXPANSION JOINT IN THE PAVING, THE EXPANSION JOINT MUST FOLLOW THROUGH THE CURB. THE REINFORCING STEEL MUST ALSO BE CUT AT THE EXPANSION JOINT AND NOT ALLOWED TO RUN THROUGH THE JOINT CONTINUOUSLY. A SAW CUT EXPANSION JOINT IS NOT ACCEPTABLE BECAUSE NORMAL EXPANSION AND CONTRACTION WILL CAUSED THE CONCRETE TO PUSH AGAINST THE TWO SECTIONS AND ONE SIDE WILL EVENTUALLY FAIL. IF AN EXPANSION JOINT IS LEFT OUT AND MUST BE SAW CUT IN, THE CURB SHOULD BE CUT TWICE AND A 3" PIECE OF CONCRETE IS REMOVED. IN ALL CASES THE JOINT SHOULD BE CAULKED WITH NP1.
9. CONCRETE TOUCHING THE BACK OF CURBS- ANY CONCRETE THAT TOUCHES THE BACK OF A CURB INCLUDING SIDEWALKS, ISLAND NOSINGS AND PAYPHONE PADS SHALL BE ISOLATED FROM THE CURB USING 3/8" BLACK ASPHALT IMPREGNATED FIBERBOARD. CONTRACTOR SHALL USE A REMOVABLE STRIP OR A ZIP-STRIP AND SEAL THE JOINT WITH SJ1. THE ONLY EXCEPTION IS IF THE ISLAND NOSINGS ARE POURED MONOLITHICALLY WITH THE CURB AND PARKING LOT.
10. CURBS AT THE BUILDING FOUNDATION- IF A CURB TOUCHES THE BUILDING FOUNDATION, IT NEEDS TO BE ISOLATED WITH EXPANSION JOINT MATERIAL JUST LIKE THE PAVING. IF AN EXPANSION JOINT IS LEFT OUT AND MUST BE SAW CUT IN, A 1/2" PIECE OF CONCRETE SHOULD BE REMOVED. THE JOINT SHOULD BE CAULKED WITH NP1.
11. EXPANSION JOINTS AT ISLAND NOSINGS- IF THE ISLAND NOSINGS ARE POURED MONOLITHICALLY WITH THE CURB AND PARKING LOT, THEN PAVING EXPANSION JOINTS SHOULD CONTINUE THROUGH THE NOSINGS.

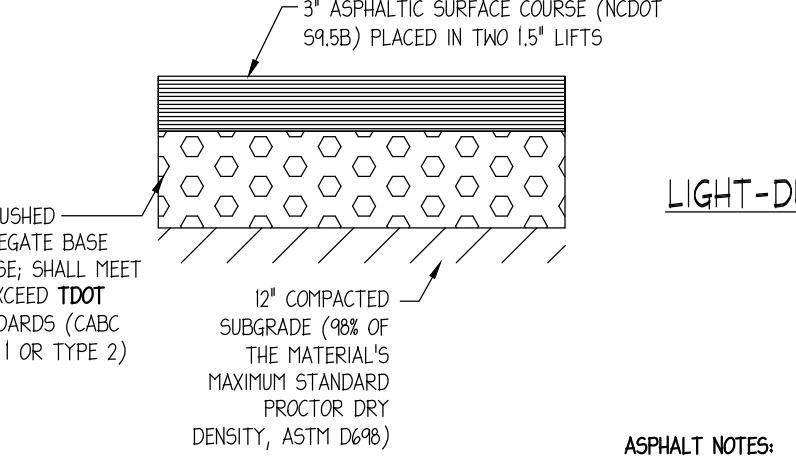
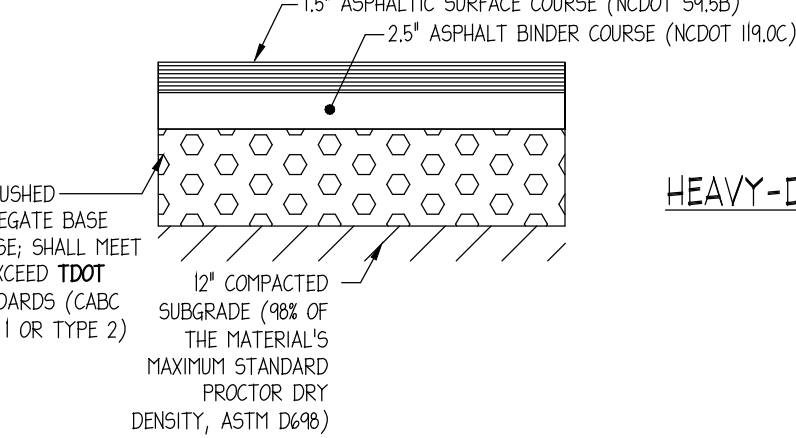


#### REINFORCEMENT TABLE

| CONCRETE SECTION DESIGNATION | (T) SLAB THICKNESS (IN.) | (COVER) (IN.) (2" MIN) | MAX. EXPANSION JOINT SPACING (FT.) | 60,000 PSI STEEL REINFORCING STEEL BAR SIZE & SPACING |
|------------------------------|--------------------------|------------------------|------------------------------------|---|
| TYPE 'A'                     | 6                        | 2                      | 15                                 | #3 @ 24" C-C  |
| TYPE 'B'                     | 7                        | 2                      | 15                                 | #3 @ 24" C-C  |

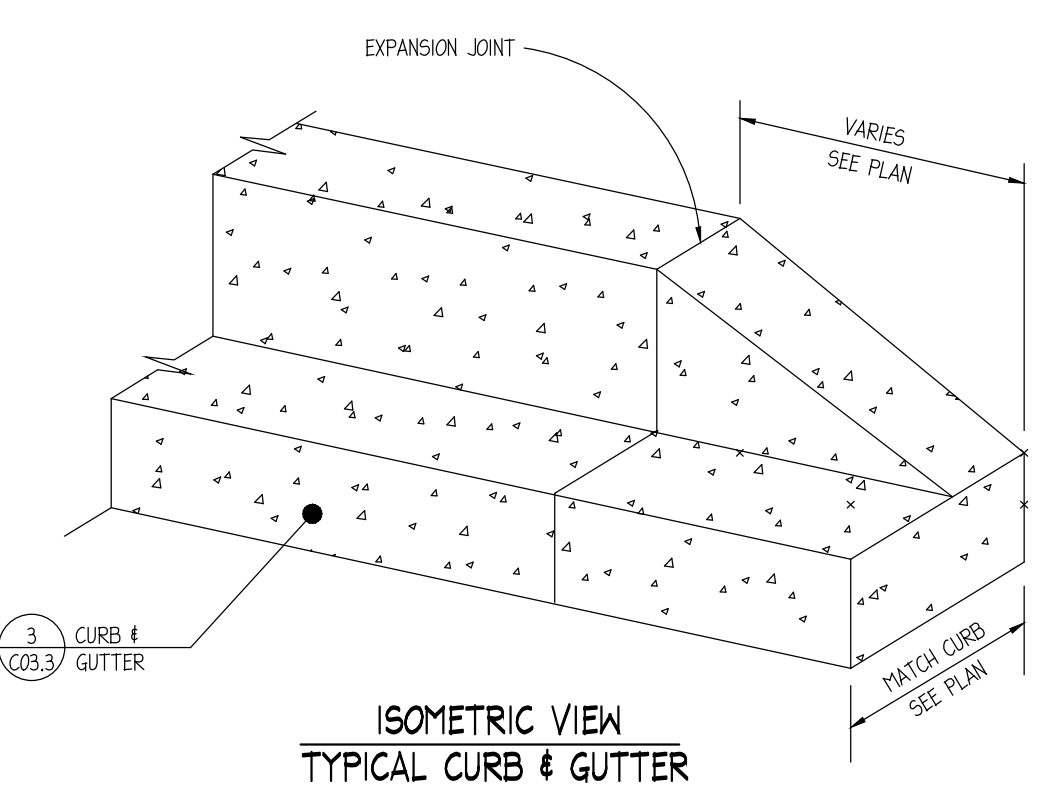


4" GRADED AGGREGATE BASE MEETING TDOT STANDARD SPECIFICATIONS COMPACTED TO A MINIMUM 98% OF MAX DRY DENSITY.

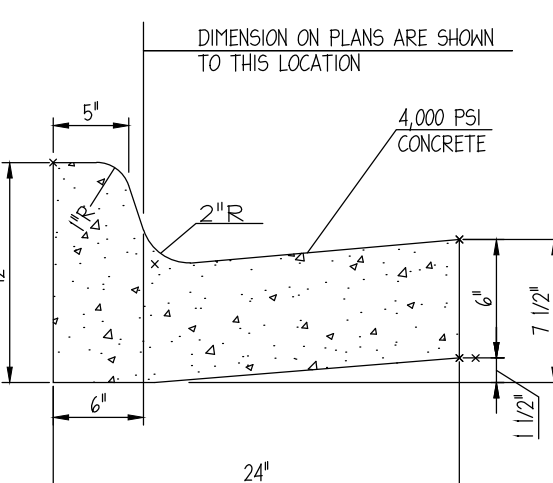


- ASPHALT NOTES:
- THE ASPHALT SURFACE COURSE SHOULD CONFORM TO THE MOST RECENT EDITION OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION (TDOT) STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, FOR HOT MIX ASPHALTIC CONCRETE SURFACE COURSE.
  - THE BASE COURSE SHOULD CONFORM TO THE TDOT STANDARDS FOR BASE COURSE COMPACTED TO A MINIMUM 98 PERCENT OF THE MODIFIED PROCTOR (ASTM D-1557) MAXIMUM DRY DENSITY.
  - TACK COAT SHOULD BE PROVIDED ATOP EACH PAVEMENT SECTION.

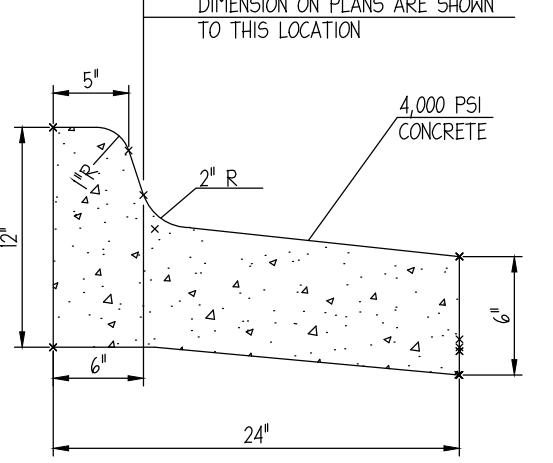
2 PAVEMENT SECTION N.T.S.



4 CURB TRANSITION N.T.S.



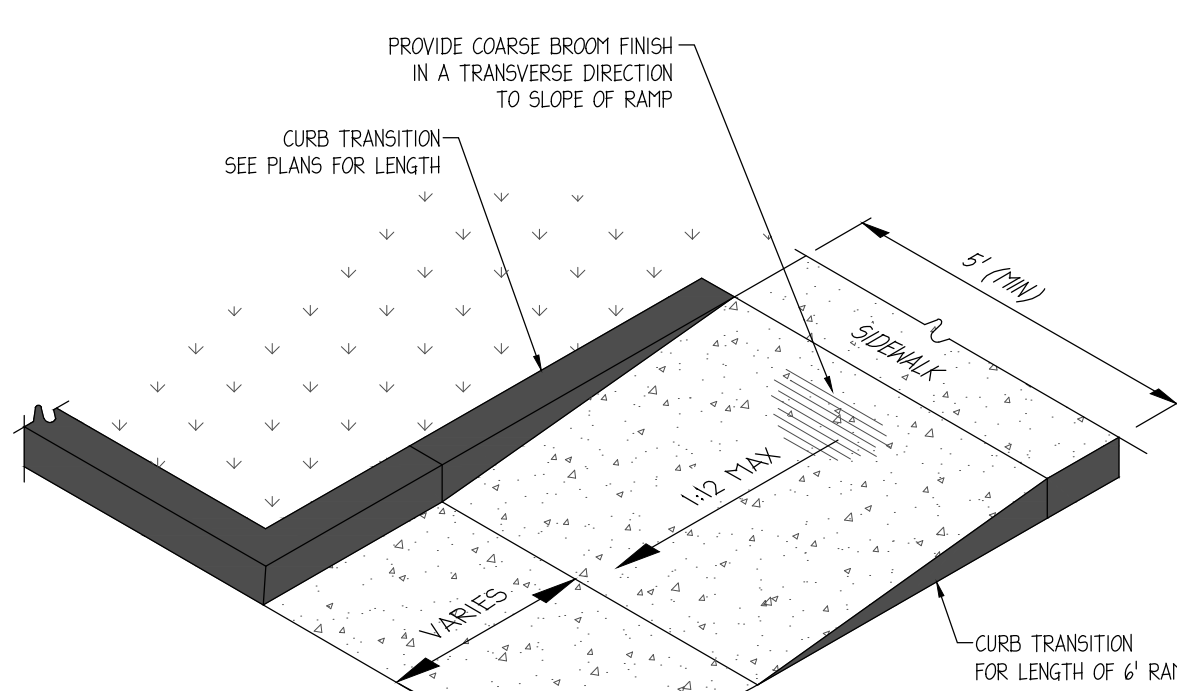
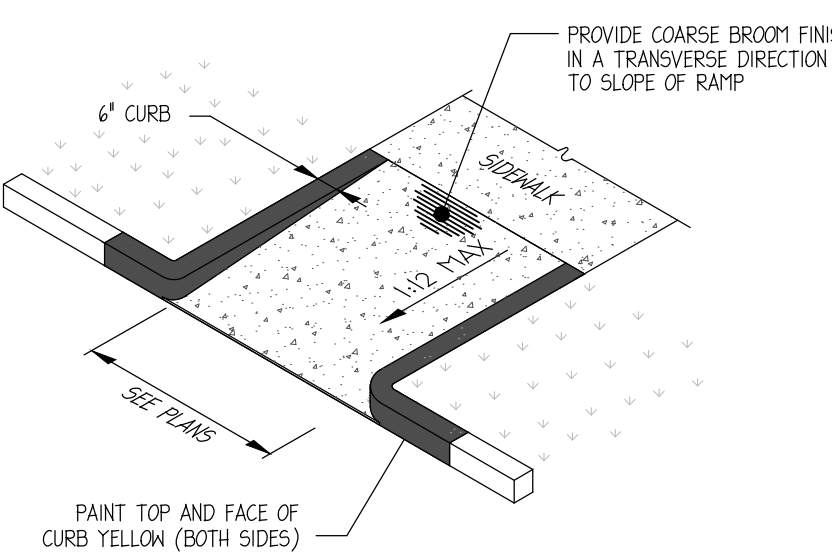
NORMAL CURB & GUTTER



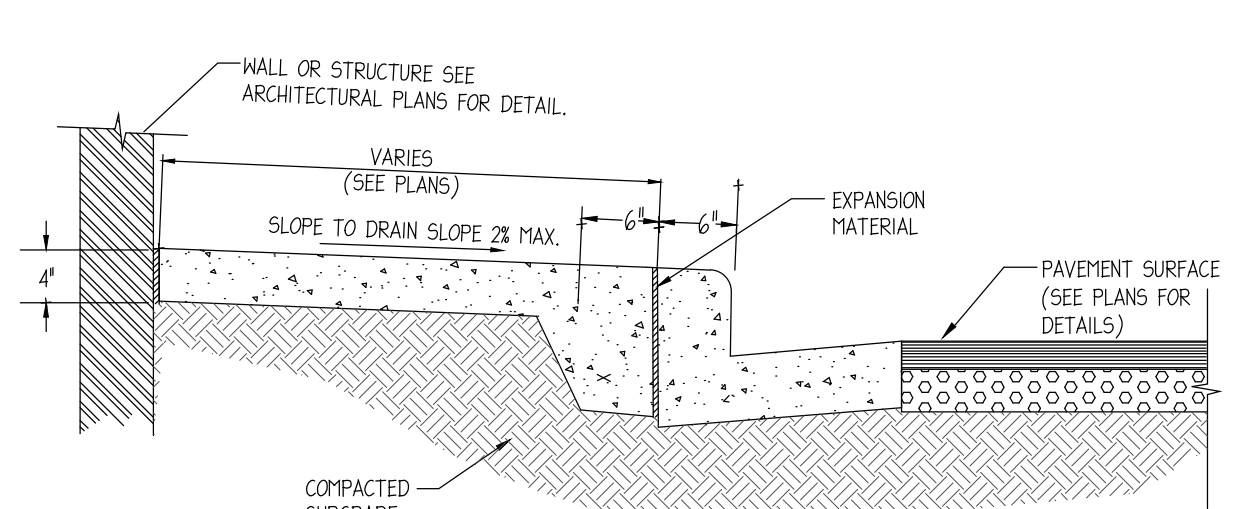
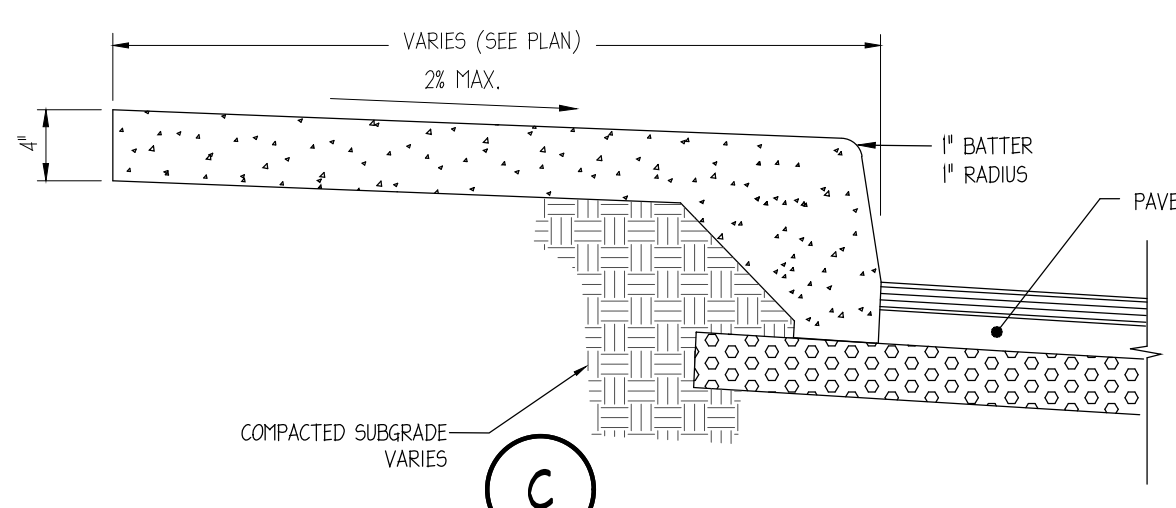
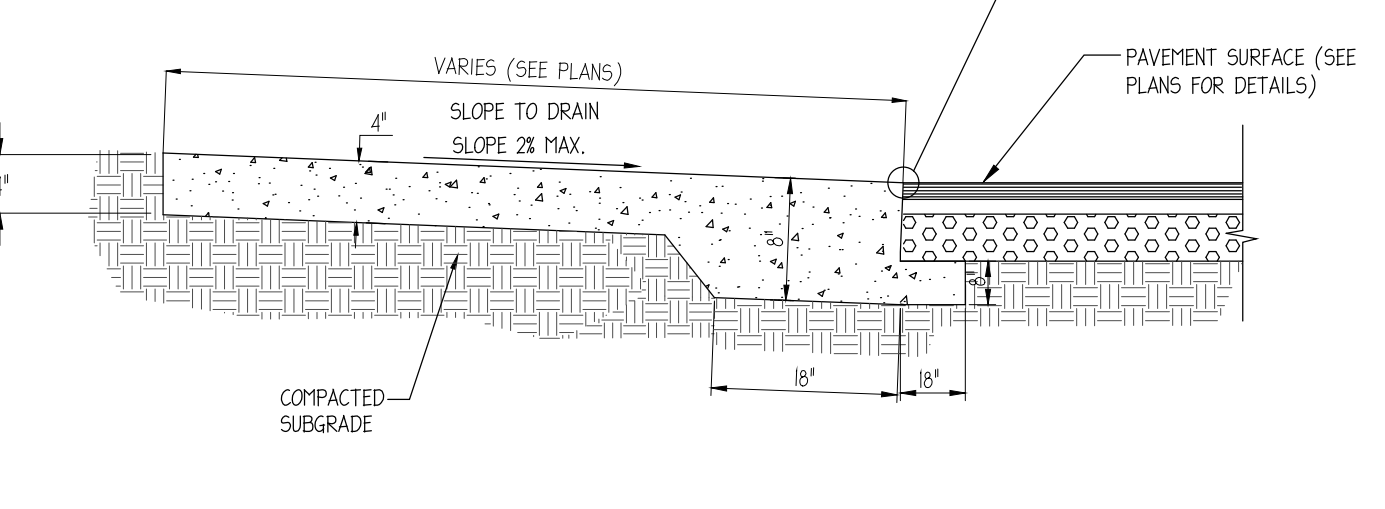
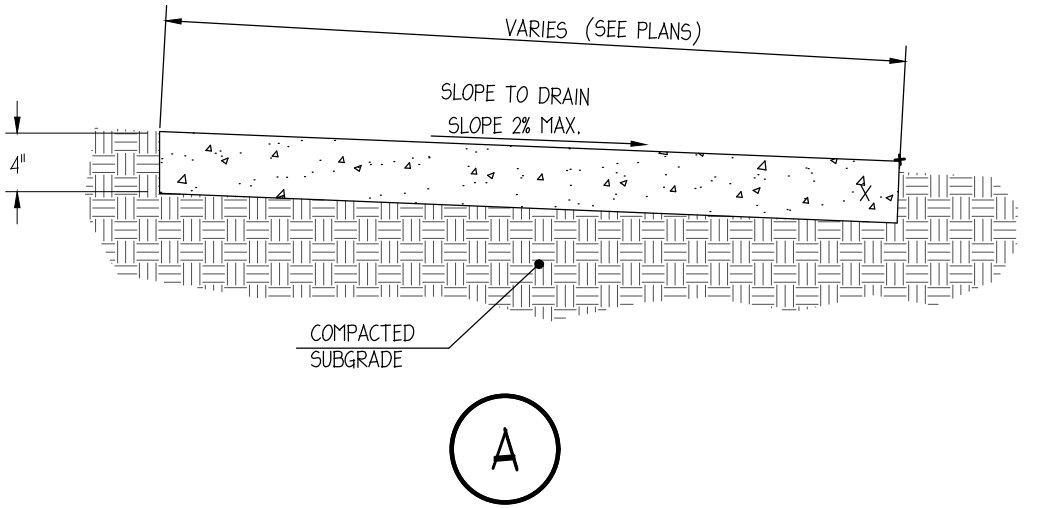
REVERSE CURB & GUTTER

USE REVERSE OR "SPILL" CURB WHEN THE PAVEMENT SLOPES AWAY FROM CURB.

3 24" CURB & GUTTER N.T.S.

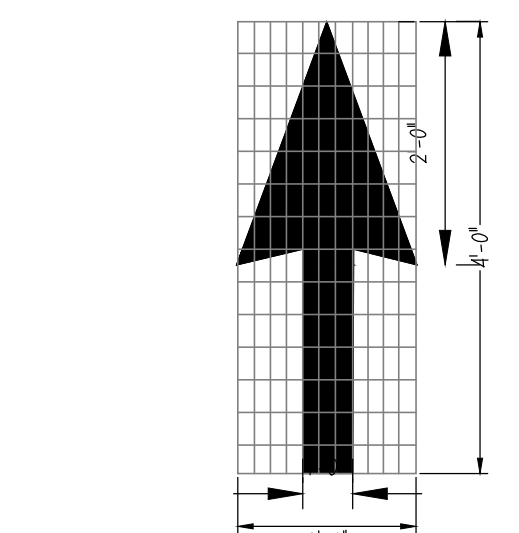


5 CURB RAMP N.T.S.



- CONCRETE NOTES:
- FC = 4,000 PSI
  - PROVIDE CONTROL JOINTS AT 5' O.C.
  - PROVIDE EXPANSION JOINTS ONLY WHERE CONCRETE PAVEMENT ABUTS FIXED OBJECTS, CURB AND GUTTER, AND OTHER PAVEMENT TYPES.
  - 6"x6" WxM MAY BE SUBSTITUTED WITH EQUIVALENT STRENGTH FIBER MESH.

6 CONCRETE SIDEWALK N.T.S.



7 DIRECTIONAL ARROW N.T.S.

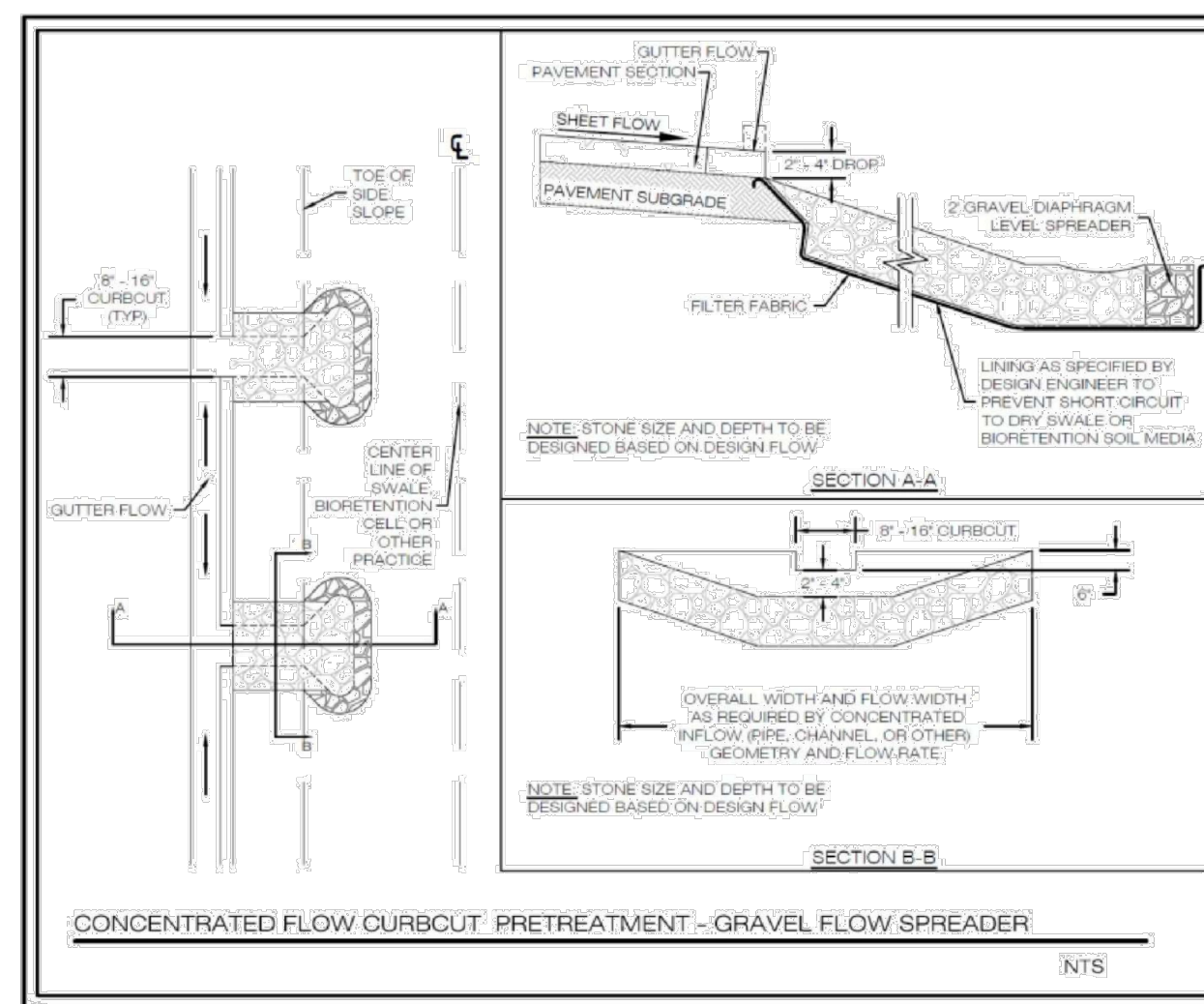
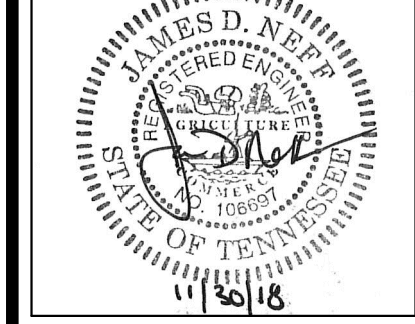


Figure 1.11: Pre-Treatment Option - Gravel Flow Spreader for Concentrated Flow Outside of ROW (source: VADCR, 2010)

8 GRAVEL FLOW SPREADER N.T.S.



**ingenium**  
ENTERPRISES  
PLANNING & ENGINEERING  
1449 N DALE HARRY HWY  
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TAMPA, FL 33618  
813.367.0084  
INGENIUM@GMAIL.COM



PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
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| REVISION HISTORY |     |
|------------------|-----|
| 1                | ADD |
| 2                | ADD |
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| 10               | ADD |

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PROJ # 180050  
DWG NAME 180050 C03.DWG  
ISSUE DATE 11/30/2018  
PROJ TGR LLC

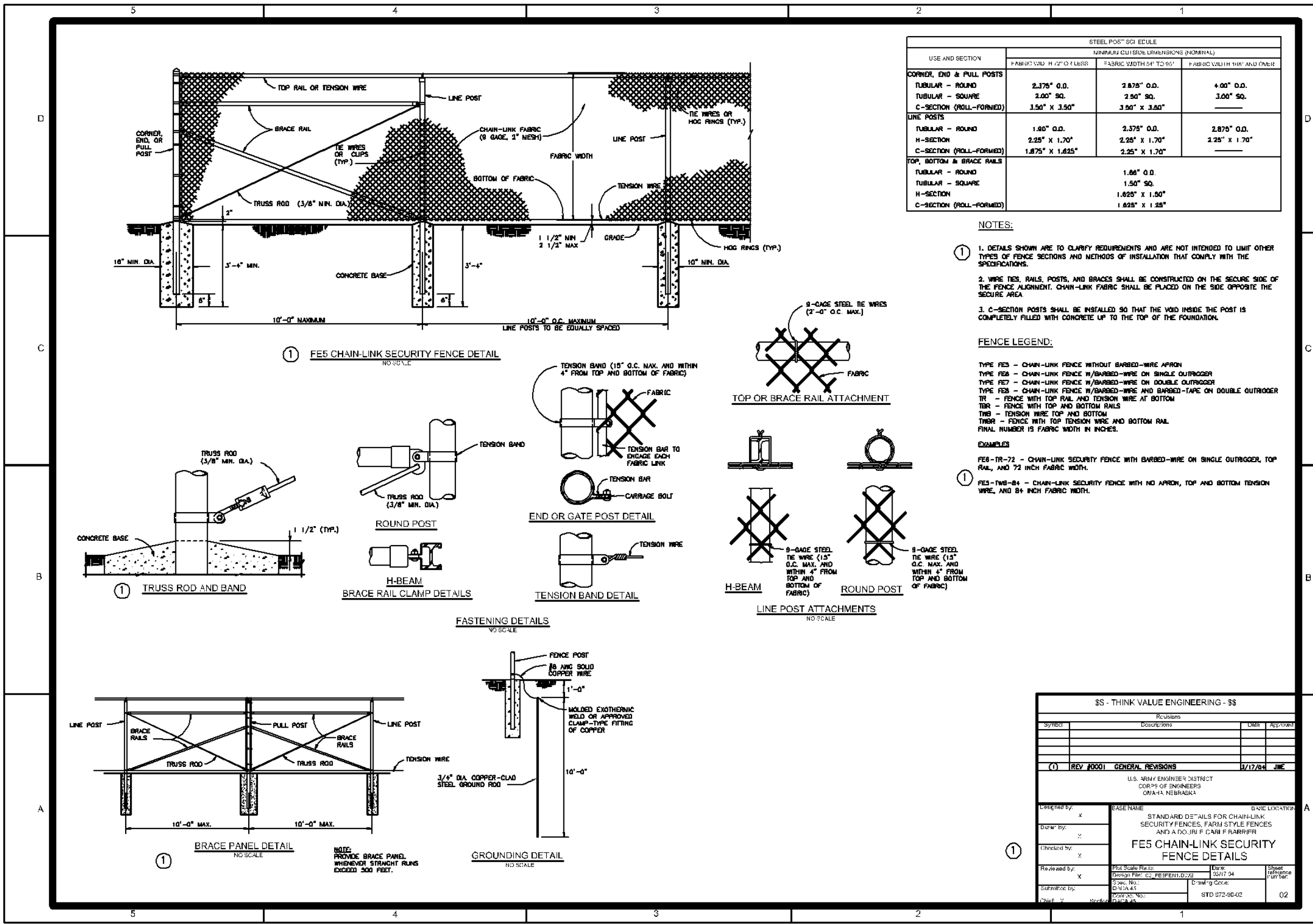
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C03.3  
SHEET NUMBER

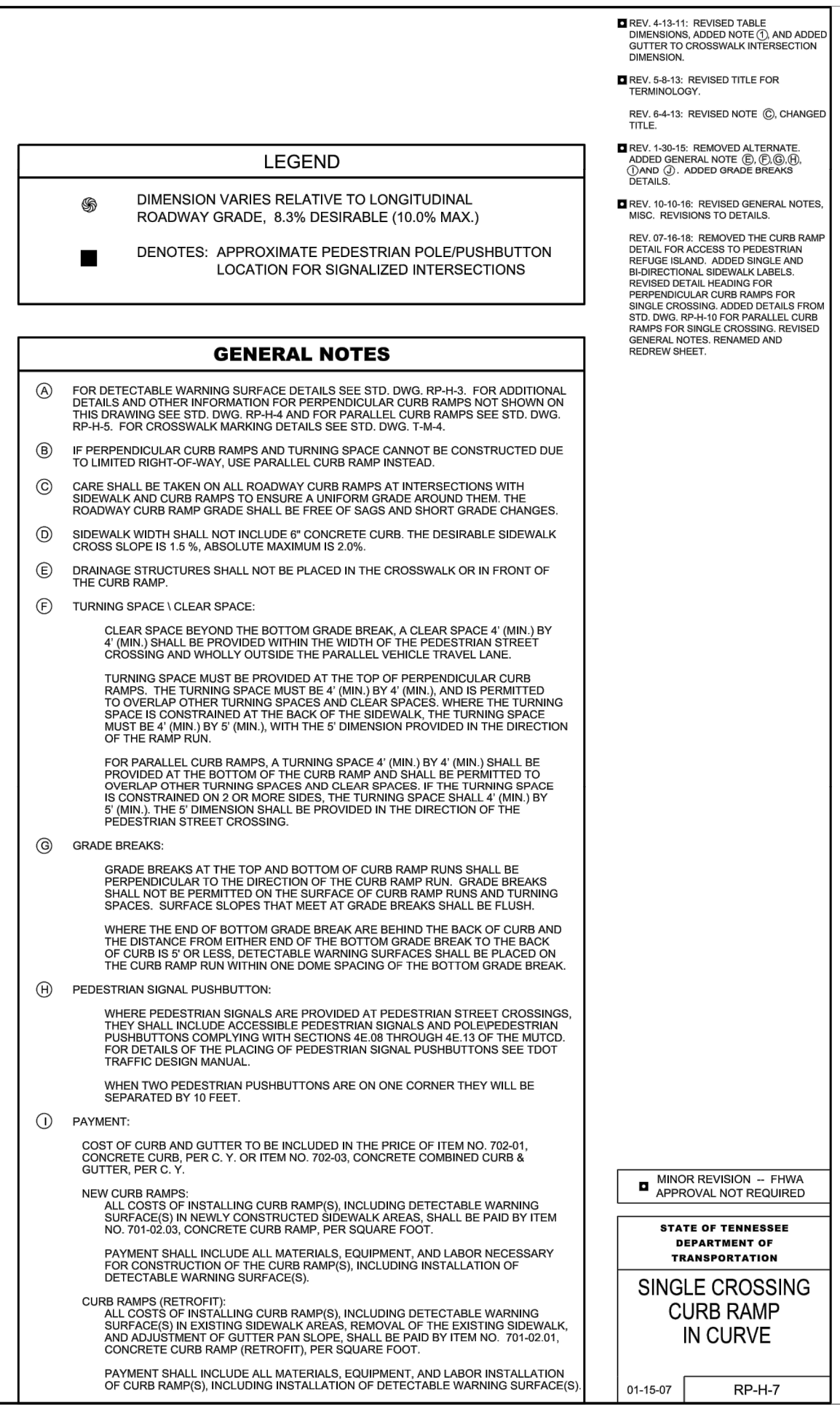
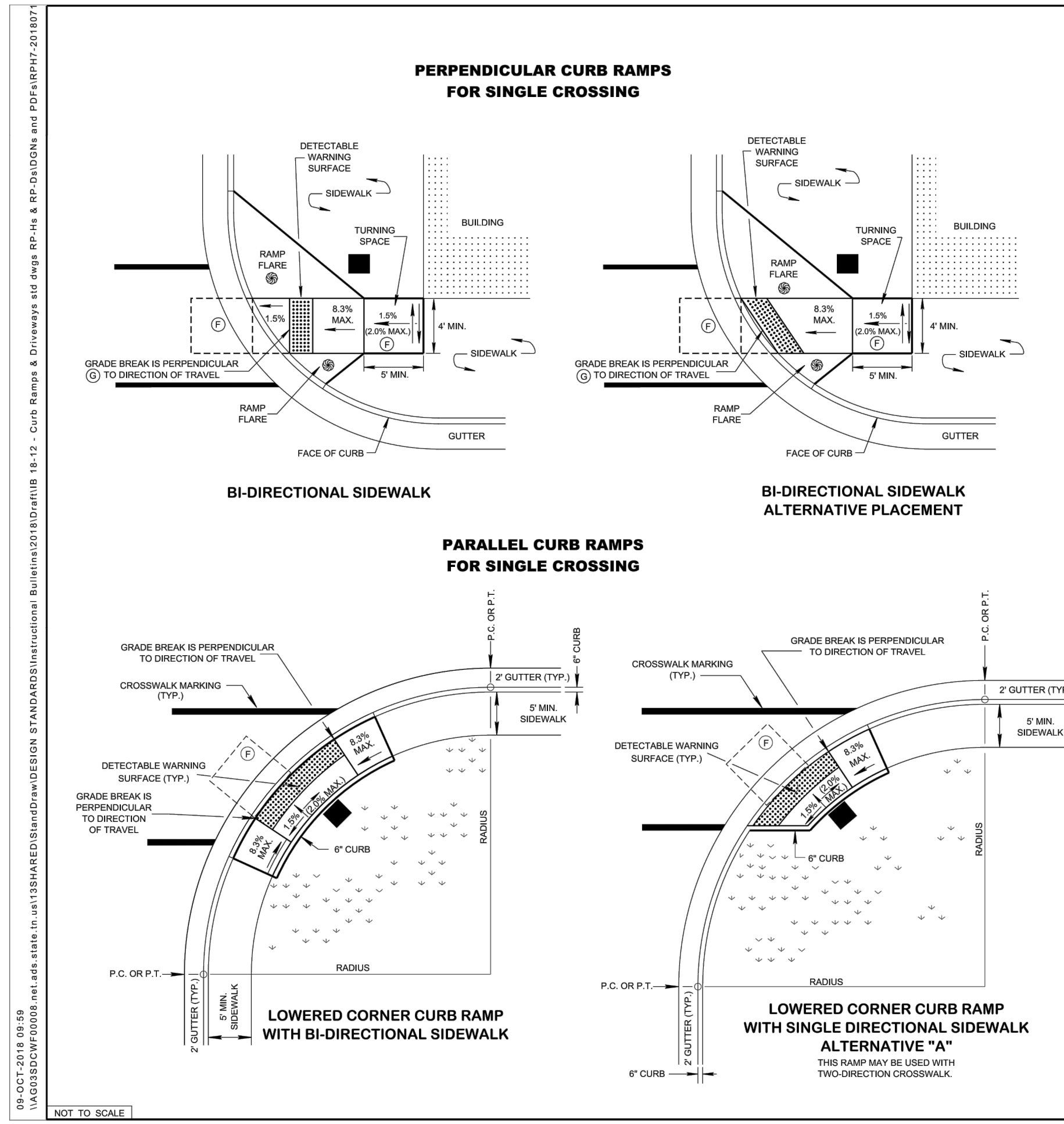
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1 CHAINLINK FENCE NTS



2 TDOT CURB RAMP NTS



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JAMES D. NEEB, P.E. PROFESSIONAL ENGINEER IN THE STATE OF TENNESSEE 1981/8

PANDA EXPRESS, INC. STORE NUMBER: ##### DEVELOPMENT NUMBER: 6559 2740 ELM HILL PIKE NASHVILLE, TENNESSEE

PLANS FOR:

CLIENT:

PANDA EXPRESS, INC. 1683 HAZELNUT GROVE AVENUE ROSEMEAD, CA 91770 PHONE: 626-799-9898

REVISION HISTORY

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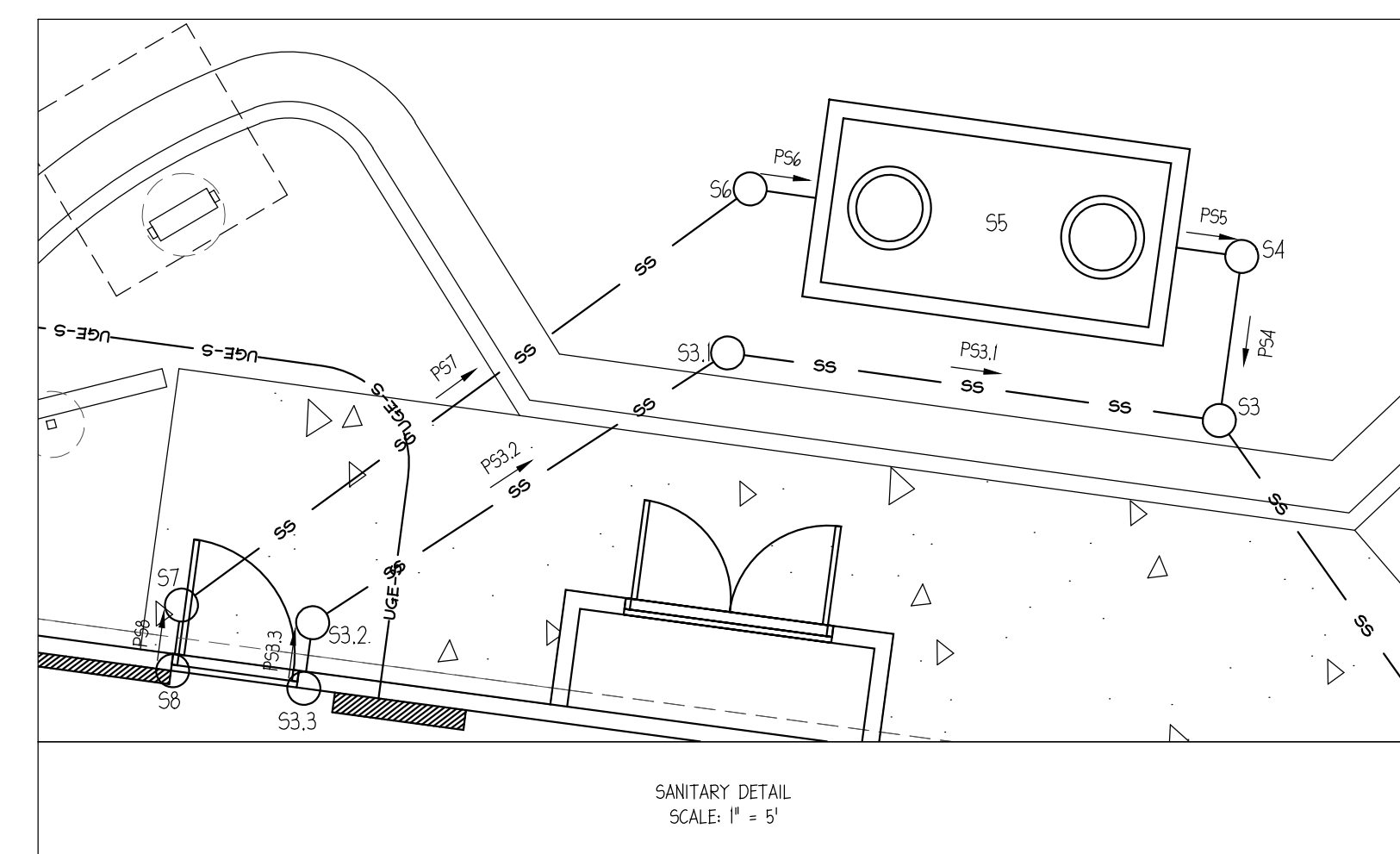
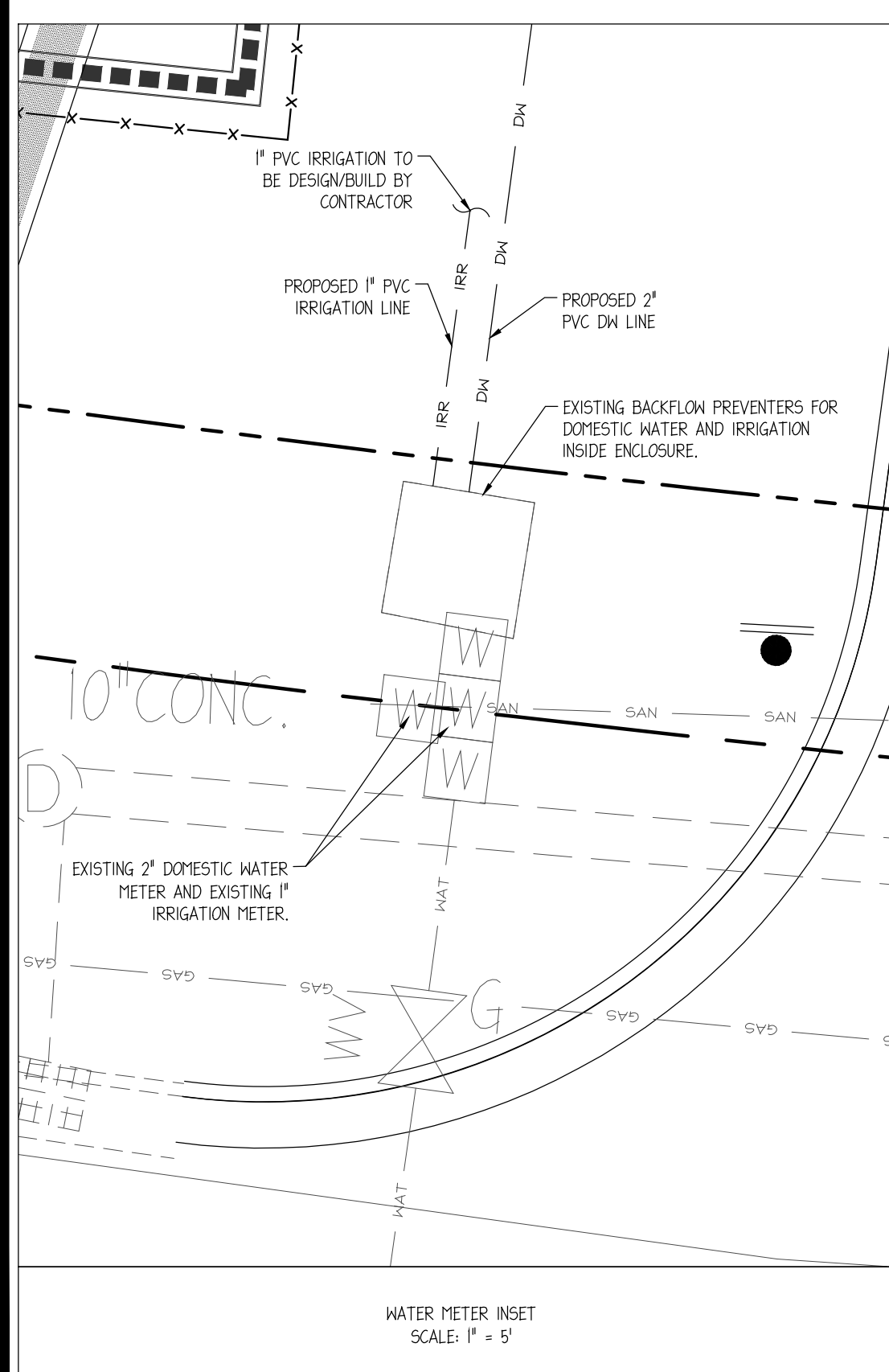
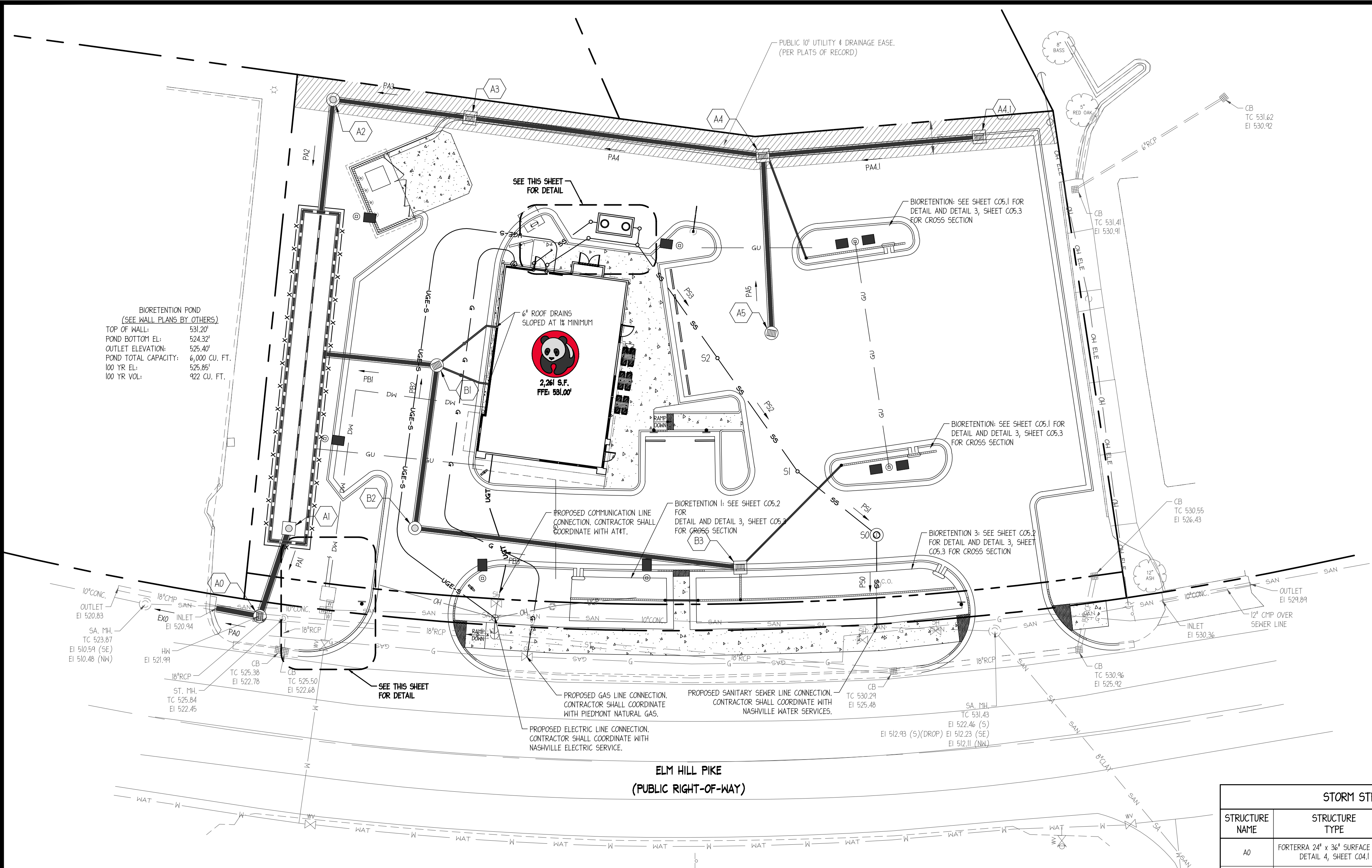
PROJ # 180050 DWG NAME 180050 C03.DWG ISSUE DATE 11/30/2018 PROJ TGR LLC

HARDSCAPE DETAILS III

C03.4 SHEET NUMBER

ISSUE FOR PERMIT





| STORM PIPE TABLE |      |        |       |          |
|------------------|------|--------|-------|----------|
| NAME             | SIZE | LENGTH | SLOPE | MATERIAL |
| EXD              | 18"  | 30'    | 0.36% | RCP      |
| PA0              | 18"  | 13'    | 0.30% | RCP      |
| PA1              | 18"  | 28'    | 0.50% | RCP      |
| PA2              | 15"  | 35'    | 0.50% | RCP      |
| PA3              | 15"  | 42'    | 0.50% | RCP      |
| PA4              | 15"  | 90'    | 0.50% | RCP      |
| PA4.1            | 15"  | 66'    | 0.35% | RCP      |
| PA5              | 15"  | 54'    | 0.25% | RCP      |
| PB1              | 15"  | 35'    | 0.50% | RCP      |
| PB2              | 15"  | 50'    | 0.50% | RCP      |
| PB3              | 15"  | 100'   | 0.25% | RCP      |

| SANITARY STRUCTURE TABLE |   |               |                                |                |
|--------------------------|---|---------------|--------------------------------|----------------|
| STRUCTURE NAME           | STRUCTURE TYPE                                    | RIM ELEVATION | INVERT IN                      | INVERT OUT     |
| S0                       | INSIDE DROP MANHOLE<br>DETAIL 1, SHEET C04.2      | 530.81        | 521.62 (PS1)                   | 512.04 (PS0)   |
| S1                       | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.18        | 521.93 (PS2)                   | 521.93 (PS1)   |
| S2                       | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.12        | 523.20 (PS3)                   | 523.20 (PS2)   |
| S3                       | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.27        | 524.47 (PS4)<br>524.57 (PS3.1) | 524.47 (PS3)   |
| S3.1                     | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.33        | 524.72 (PS3.2)                 | 524.72 (PS3.1) |
| S3.2                     | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.93        | 524.87 (PS3.3)                 | 524.87 (PS3.2) |
| S3.3                     | BUILDING STUB                                     | 531.00        | 524.89 (PS3.3)                 |                |
| S4                       | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.25        | 524.62 (PS5)                   | 524.62 (PS4)   |
| S5                       | 1,500 GALLON GREASE TRAP<br>DETAIL 8, SHEET C04.2 | 530.30        |                                |                |
| S6                       | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.16        | 524.77 (PS7)                   | 524.77 (PS6)   |
| S7                       | 6" CLEAFOUT<br>DETAIL 4, SHEET C04.2              | 530.93        | 524.98 (PS8)                   | 524.98 (PS7)   |
| S8                       | BUILDING STUB                                     | 531.00        |                                | 525.00 (PS8)   |

| SANITARY PIPE TABLE |      |        |       |            |
|---------------------|------|--------|-------|------------|
| NAME                | SIZE | LENGTH | SLOPE | MATERIAL   |
| PS0                 | 6"   | 28'    | 0.50% | SDR-35 PVC |
| PS1                 | 6"   | 31'    | 1.00% | SDR-35 PVC |
| PS2                 | 6"   | 42'    | 3.00% | SDR-35 PVC |
| PS3                 | 6"   | 42'    | 3.00% | SDR-35 PVC |
| PS3.1               | 6"   | 15'    | 1.00% | SDR-35 PVC |
| PS3.2               | 6"   | 15'    | 1.00% | SDR-35 PVC |
| PS3.3               | 6"   | 2'     | 1.00% | SDR-35 PVC |
| PS4                 | 6"   | 5'     | 3.00% | SDR-35 PVC |
| PS5                 | 6"   | 2'     | 1.00% | SDR-35 PVC |
| PS6                 | 6"   | 2'     | 1.00% | SDR-35 PVC |
| PS7                 | 6"   | 21'    | 1.00% | SDR-35 PVC |
| PS8                 | 6"   | 2'     | 1.00% | SDR-35 PVC |

| STORM STRUCTURE TABLE |   |               |                                |                |
|-----------------------|---|---------------|--------------------------------|----------------|
| STRUCTURE NAME        | STRUCTURE TYPE  | RIM ELEVATION | INVERT IN                      | INVERT OUT     |
| A0                    | FORTERRA 24" x 36" SURFACE INLET<br>DETAIL 4, SHEET C04.1 | 523.99        | 521.08 (PA1)                   | 520.98 (PA0)   |
| A1                    | BIORETENTION OUTLET STRUCTURE<br>DETAIL 3, SHEET C04.1    | 525.40        |                                | 521.22 (PA1)   |
| A2                    | JUNCTION BOX<br>DETAIL 2, SHEET C04.3                     | 530.05        | 525.50 (PA3)                   | 525.50 (PA2)   |
| A3                    | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.80        | 525.70 (PA4)                   | 525.71 (PA3)   |
| A4                    | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.75        | 526.15 (PA5)<br>526.15 (PA4.1) | 526.15 (PA4)   |
| A4.1                  | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.80        |                                | 526.39 (PA4.1) |
| A5                    | NO.42 CATCH BASIN<br>DETAIL 2, SHEET C04.4                | 529.75        |                                | 526.29 (PA5)   |
| B1                    | NO.42 CATCH BASIN<br>DETAIL 2, SHEET C04.4                | 529.80        | 525.07 (PB2)                   | 525.07 (PB1)   |
| B2                    | JUNCTION BOX<br>DETAIL 2, SHEET C04.3                     | 529.20        | 525.32 (PB3)                   | 525.32 (PB2)   |
| B3                    | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.00        |                                | 525.57 (PB3)   |

| UTILITY LEGEND   |                   |                       |
|--|-------------------|-----------------------|
| UTILITY  | LINETYPE/SYMBOL   | REFERENCE             |
| DOMESTIC WATER LINE  | — DW — DW —       | 2" PVC                |
| FIRE WATER LINE  | — FW — FW —       | N/A                   |
| BUILDING FIRE SPRINKLER LINE   | — FMS — FMS —     | N/A                   |
| IRRIGATION WATER LINE  | — IRR — IRR —     | 1" PVC                |
| DOMESTIC WATER METER (WM)  | — WM —            | N/A, EXISTING         |
| IRRIGATION METER (IRR)   | — IRR —           | N/A, EXISTING         |
| BACKFLOW PREVENTER (RFP)   | — RFP —           | N/A, EXISTING         |
| FIRE VAULT (DDC)   | — DDC —           | N/A                   |
| DC BACKFLOW PREVENTER  | — DC —            | N/A                   |
| WATER TAP OR TEE   | — T —             | N/A, EXISTING         |
| BUTTER VALVE   | — BV —            | DETAIL 3, SHEET C04.3 |
| THRUST BLOCK (TB)  | — TB —            | N/A                   |
| FIRE HYDRANT (FH)  | — FH —            | N/A                   |
| FIRE DEPARTMENT CONNECTION (FDC)   | — FDC —           | N/A                   |
| SANITARY SEWER (SS)  | — SS — SS —       | 4" AND 6" SDR-35 PVC  |
| SANITARY MANHOLE (SSMH)  | — SSMH —          | DETAIL 1, SHEET C04.2 |
| GENERAL CLEAN OUT (CO)   | — CO —            | DETAIL 4, SHEET C04.2 |
| SAMPLING MANHOLE   | — SM —            | N/A                   |
| SANITARY STRUCTURE NUMBER  | — SSN —           | SEE PLANS             |
| UNDERGROUND ELECTRIC LINE-PRIMARY  | — UGE-P — UGE-P — | N/A                   |
| UNDERGROUND ELECTRIC LINE-SECONDARY  | — UGE-S — UGE-S — | "                     |
| POST INDICATOR VALVE   | — PIV —           | N/A                   |
| SITE LIGHTING POLE   | — LP —            | SEE PLANS (BY OTHERS) |
| TRANSFORMER PAD  | — TP —            | N/A                   |
| METER/CT PEDESTAL  | — MCT —           | N/A                   |
| UNDERGROUND TELEPHONE LINE   | — UGT — UGT —     | "                     |
| GENERAL UTILITY CONDUIT  | — GU — GU —       | (2) 4" CONDUIT        |
| GAS LINE   | — G —             | SEE PLANS (BY OTHERS) |
| GAS METERS   | — GM —            | SEE PLANS (BY OTHERS) |
| * ALL UTILITIES SHALL BE INSTALLED ACCORDING TO UTILITY PROVIDERS AND JURISDICTION STANDARDS AND SPECIFICATIONS. |                   |                       |

- GENERAL UTILITY NOTES**
- SEE SHEET C04.1 FOR GENERAL NOTES.
  - SEE MEP PLANS FOR CONTINUATION OF ALL UTILITIES INTO BUILDING.
  - SANITARY LATERALS SHALL HAVE A MINIMUM FALL OF 1.00%.
  - CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND THEIR LOCATIONS AND ELEVATIONS PRIOR TO STARTING CONSTRUCTION.
  - THE FINAL LOCATION OF FIRE HYDRANTS, VALVES, WATER LINES, BACKFLOW PREVENTERS, ETC. SHALL BE DETERMINED DURING CONSTRUCTION. NOTIFY THE ENGINEER OF ANY CHANGES TO LOCATION OR CONFIGURATION. NFPA CODES SHALL BE ADHERED TO.
  - THE CONTRACTOR SHALL CONTACT PUBLIC UTILITIES INSPECTIONS AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY.
  - ALL WORK TO BE DONE IN STRICT ACCORDANCE WITH LOCAL GOVERNING CODES.
  - UTILITY CONDUIT MATERIAL FOR ELECTRIC, TELEPHONE, AND CABLE SHALL BE INSTALLED PER UTILITY PROVIDER SPECIFICATIONS.

CONTRACTOR SHALL COORDINATE AND VERIFY LOCATION OF ALL SIGNAGE WITH OWNER PRIOR TO CONSTRUCTION.

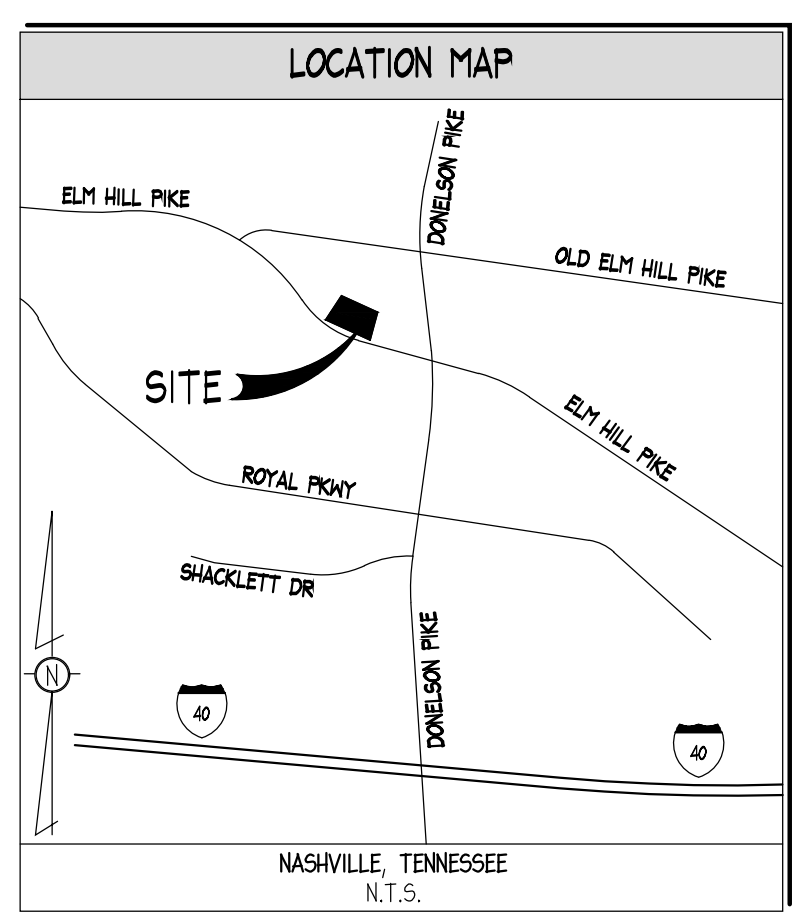
CONTRACTOR SHALL COORDINATE AND ADJUST LOCATION OF LOOP DETECTORS TO AVOID UTILITY CONFLICTS PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL INSTALL GENERAL UTILITY CONDUITS TO PLANTERS AROUND BUILDING AND PATIO. SEE ARCHITECTURAL/MEP PLANS FOR CONTINUATION.

CONTRACTOR SHALL PROTECT ALL ITEMS OUTSIDE LIMITS OF CONSTRUCTION UNLESS OTHERWISE NOTED IN THE CONSTRUCTION PLANS OR SPECIFICATIONS.

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES (LOCATIONS AND ELEVATIONS) PRIOR TO STARTING CONSTRUCTION AND ALERT ENGINEER TO ANY DISCREPANCIES IMMEDIATELY.

24-HOUR CONTACT:  
CLAY WORTHY  
602-931-6540



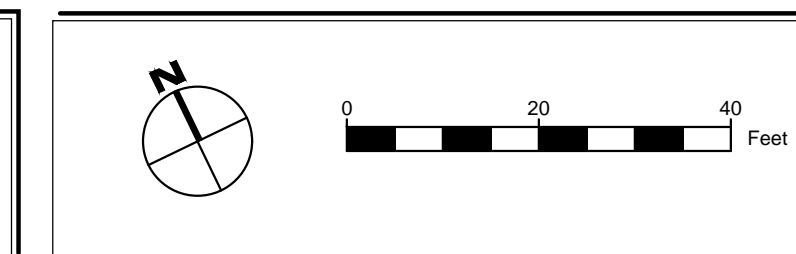
| UTILITY INFORMATION                   |    |                       |         |                  |
|---------------------------------------|----|-----------------------|---------|------------------|
| WATER                                 |    |                       |         |                  |
|                                       | GC | SELLER/DEVELOP/AND/OR | UTILITY | ADDITIONAL NOTES |
| LINE EXTENSION TO PROPERTY LINE       |    |                       |         | EXISTING         |
| PIPING FROM PROPERTY LINE TO BUILDING |    |                       |         | EXISTING         |
| TAPPING THE MAIN                      |    |                       |         | EXISTING         |
| WATER VAULT                           |    |                       |         | EXISTING         |
| WATER (METER) PIT                     |    |                       |         | EXISTING         |
| DOMESTIC METER                        |    |                       |         | EXISTING         |
| FIRE METER                            |    |                       |         | EXISTING         |
| IRRIGATION METER                      |    |                       |         | EXISTING         |
| DOMESTIC BFP                          |    |                       |         | EXISTING         |
| FIRE BFP                              |    |                       |         | EXISTING         |
| IRRIGATION BFP                        |    |                       |         | EXISTING         |
| OBTAINING EASEMENTS                   |    |                       |         | EXISTING         |
| OBTAINING ROW WORK PERMITS            |    |                       |         | EXISTING         |

| SANITARY SEWER                                   |    |                       |         |                  |
|--|----|-----------------------|---------|------------------|
|  | GC | SELLER/DEVELOP/AND/OR | UTILITY | ADDITIONAL NOTES |
| TAPPING OF THE MAIN                              |    |                       |         | EXISTING         |
| LINE EXTENSION SERVICE LATERAL (INSIDE PROPERTY) |    |                       |         | EXISTING         |
| OBTAINING EASEMENTS                              |    |                       |         | EXISTING         |
| OBTAINING ROW PERMIT                             |    |                       |         | EXISTING         |

| ELECTRIC                   |    |                       |         |                  |
|----------------------------|----|-----------------------|---------|------------------|
|                            | GC | SELLER/DEVELOP/AND/OR | UTILITY | ADDITIONAL NOTES |
| PRIMARY CONDUIT            |    |                       |         | EXISTING         |
| PRIMARY CABLE              |    |                       |         | EXISTING         |
| PRIMARY FINAL CONNECTION   |    |                       |         | EXISTING         |
| TRANSFORMER                |    |                       |         | EXISTING         |
| TRANSFORMER PAD            |    |                       |         | EXISTING         |
| POLE                       |    |                       |         | EXISTING         |
| SECONDARY CABLE            |    |                       |         | EXISTING         |
| SECONDARY CONDUIT          |    |                       |         | EXISTING         |
| SECONDARY FINAL INSPECTION |    |                       |         | EXISTING         |
| METER                      |    |                       |         | EXISTING         |
| CT CABINET                 |    |                       |         | EXISTING         |
| CT METER CONDUIT           |    |                       |         | EXISTING         |
| SOCKET                     |    |                       |         | EXISTING         |
| OBTAINING EASEMENTS        |    |                       |         | EXISTING         |
| ROW WORK PERMITS           |    |                       |         | EXISTING         |

| TELEPHONE                  |    |                       |         |                  |
|----------------------------|----|-----------------------|---------|------------------|
|                            | GC | SELLER/DEVELOP/AND/OR | UTILITY | ADDITIONAL NOTES |
| CONDUIT                    |    |                       |         | EXISTING         |
| TRENCH & BACKFILL          |    |                       |         | EXISTING         |
| CABLE & WIRE               |    |                       |         | EXISTING         |
| OBTAINING EASEMENTS        |    |                       |         | EXISTING         |
| OBTAINING ROW WORK PERMITS |    |                       |         | EXISTING         |

| GAS                        |    |                       |         |                  |
|----------------------------|----|-----------------------|---------|------------------|
|                            | GC | SELLER/DEVELOP/AND/OR | UTILITY | ADDITIONAL NOTES |
| TAP                        |    |                       |         | EXISTING         |
| PIPING                     |    |                       |         | EXISTING         |
| TRENCH AND BACKFILL        |    |                       |         | EXISTING         |
| METER                      |    |                       |         | EXISTING         |
| REGULATOR                  |    |                       |         | EXISTING         |
| OBTAINING EASEMENTS        |    |                       |         | EXISTING         |
| OBTAINING ROW WORK PERMITS |    |                       |         | EXISTING         |



16891 N DALE MARBY HWY  
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TAMPA, FL 33648  
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WWW.INGENIUMENTERPRISES.COM

PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



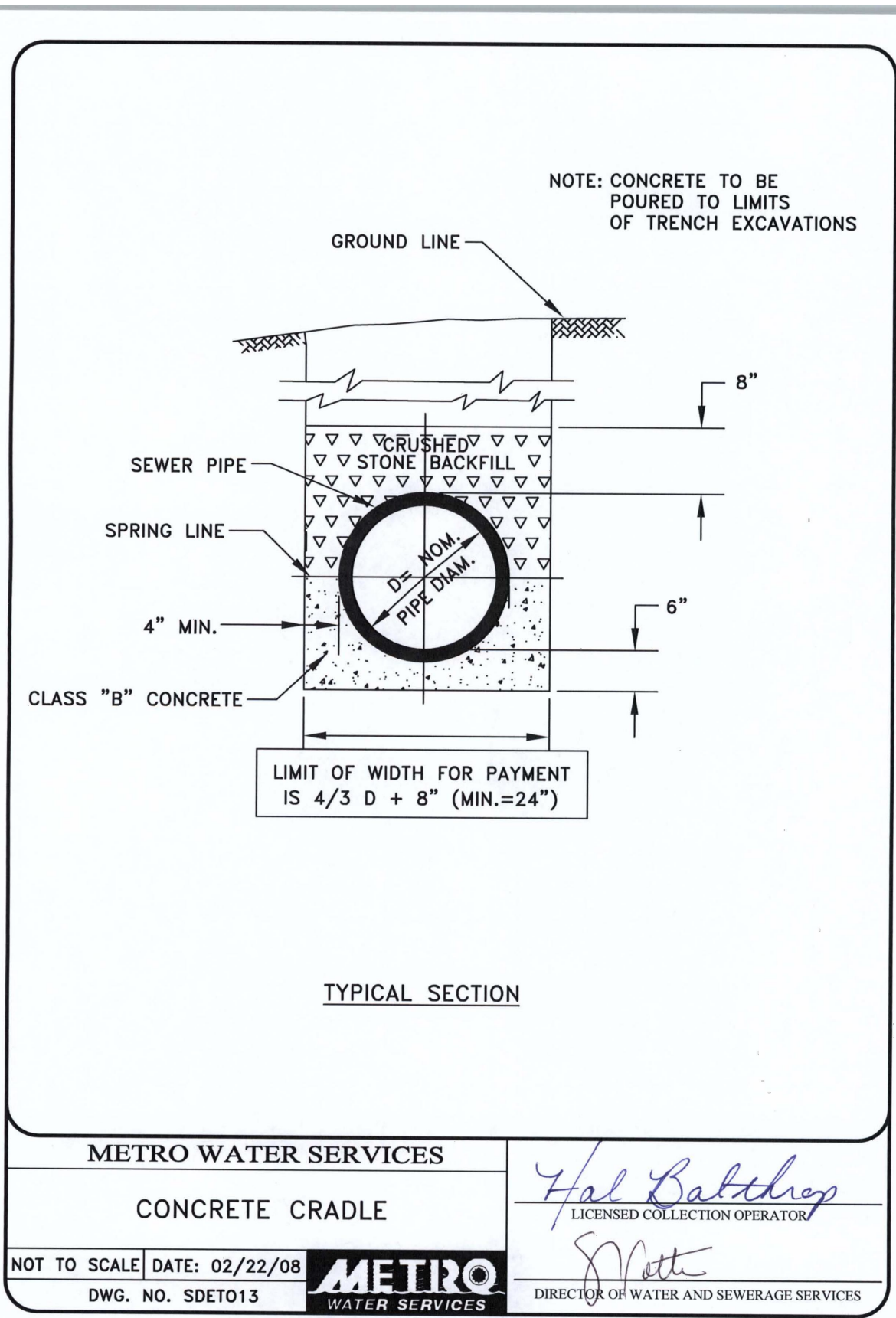
CLIENT:  
**PANDA EXPRESS, INC.**  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-8898

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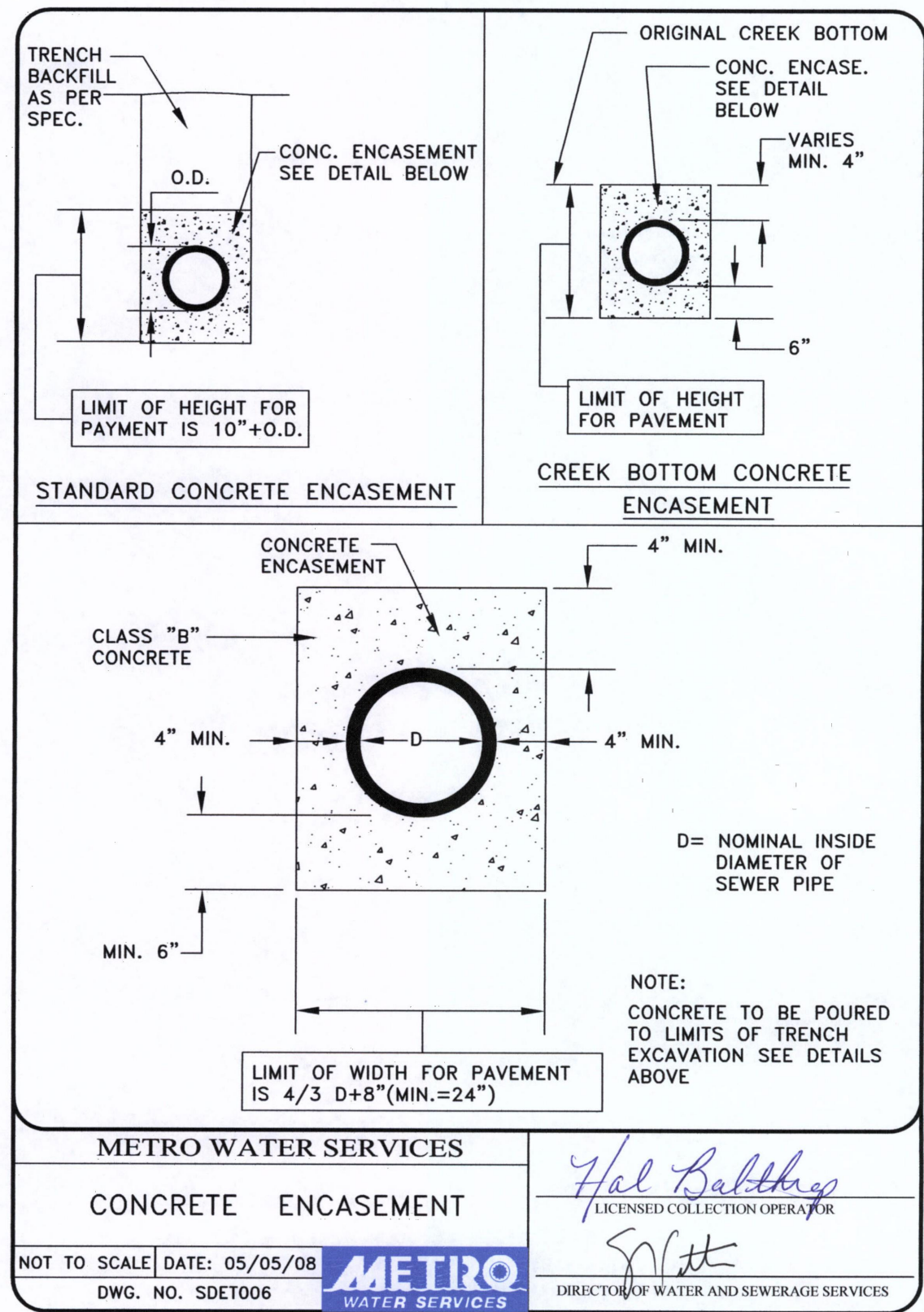
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| PROJ #   | 180050         |
| DWG NAME   | 180050 COLDING |
| ISSUE DATE   | 11/30/2018     |
| PROJ FIRM  | LLC            |
| UTILITY PLAN   |                |
| C04.0  |                |
| SHEET NUMBER   |                |

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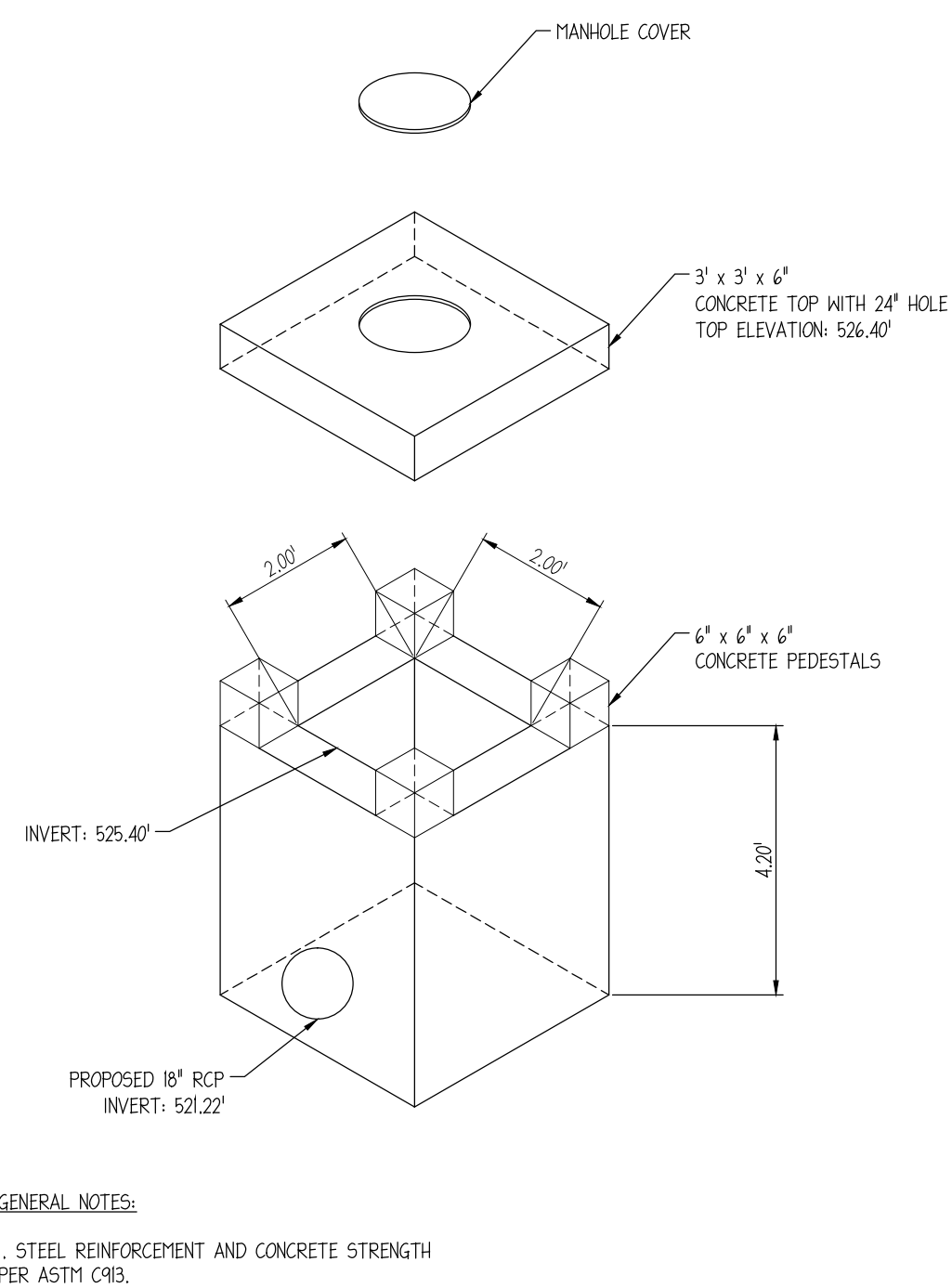




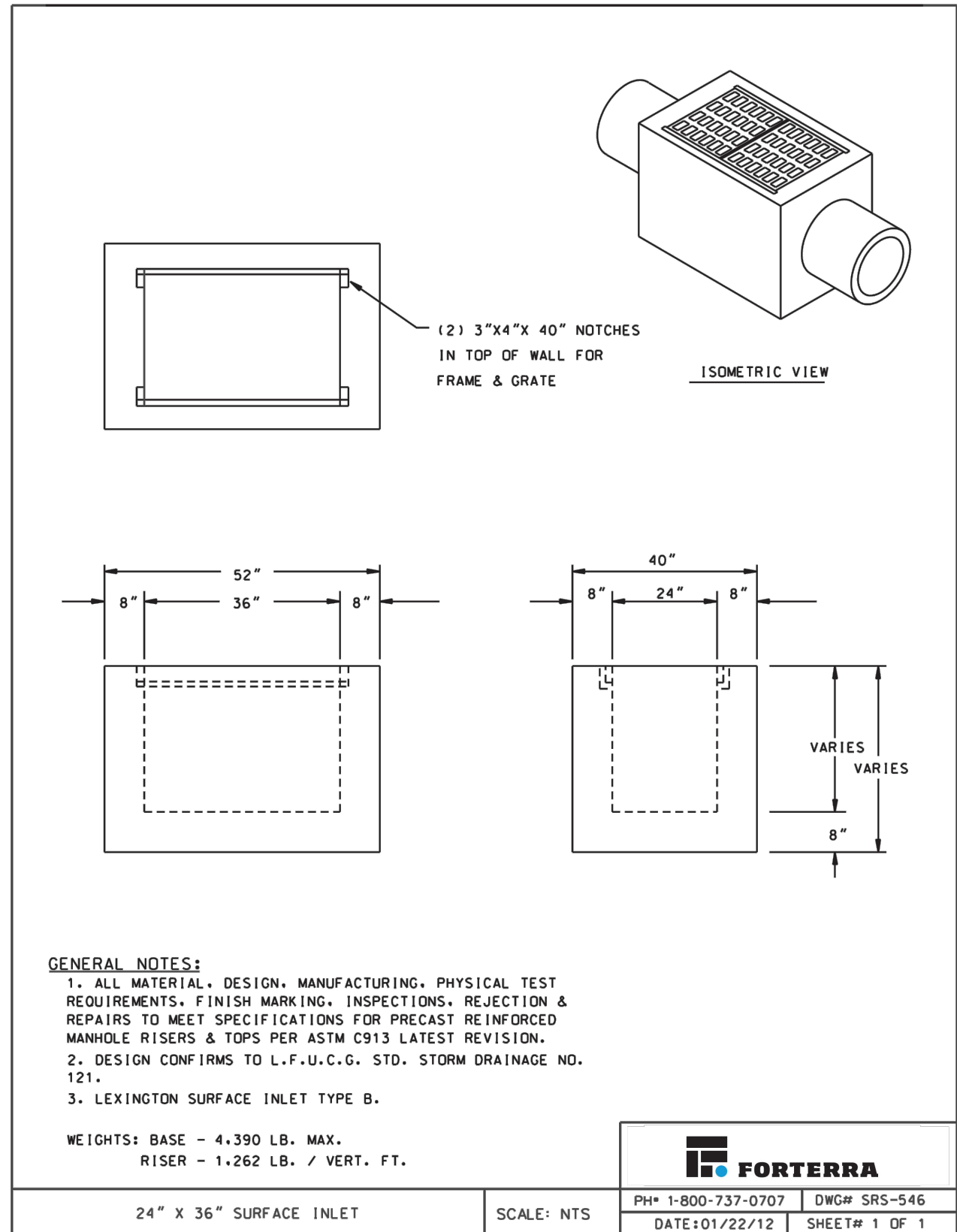
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2 CONCRETE ENCASEMENT NT5



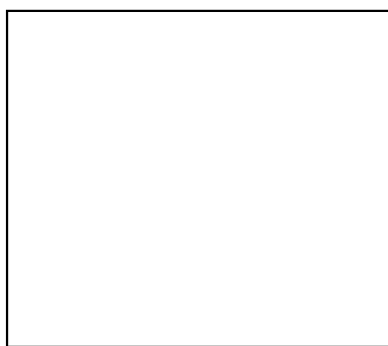
3 POND OUTLET STRUCTURE NT5



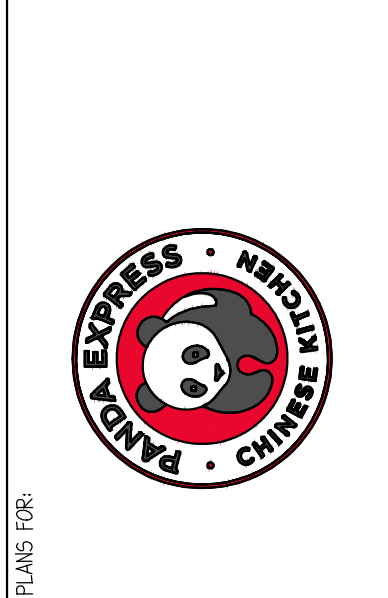
4 FORTERRA 24" 36" SURFACE INLET NT5



**ingenium**  
ENTERPRISES  
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PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:  
**PANDA EXPRESS, INC.**  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-8888

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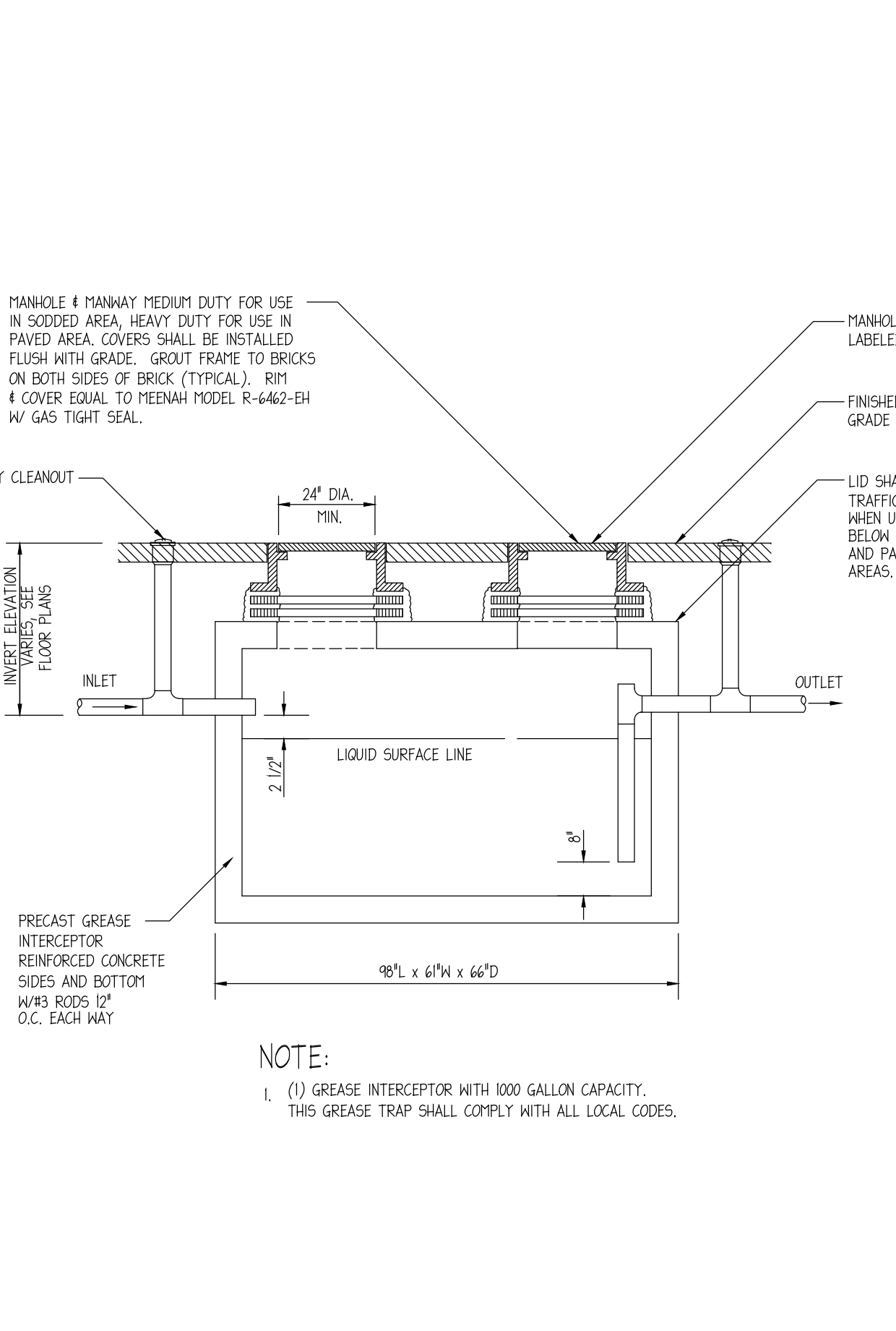
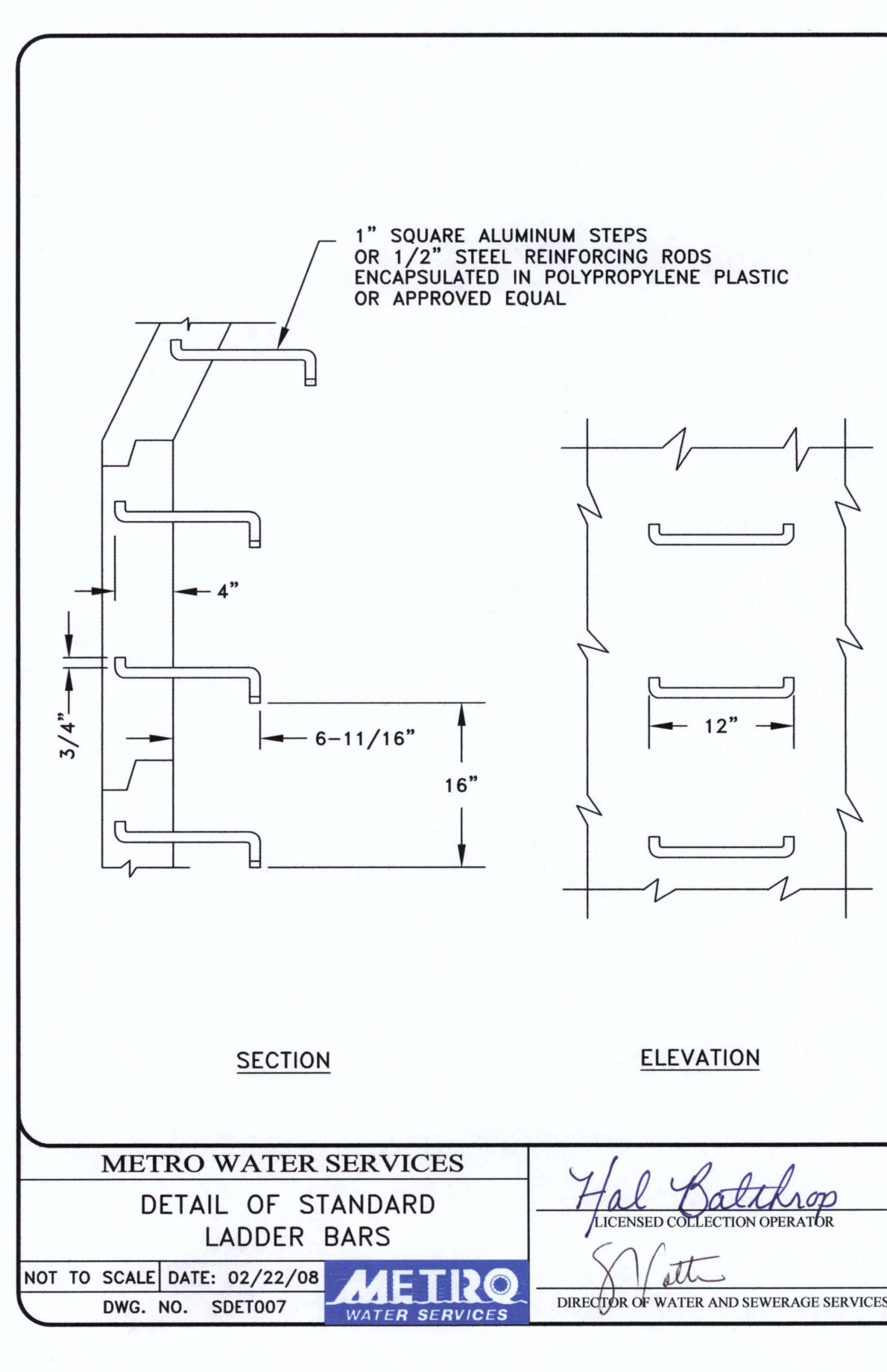
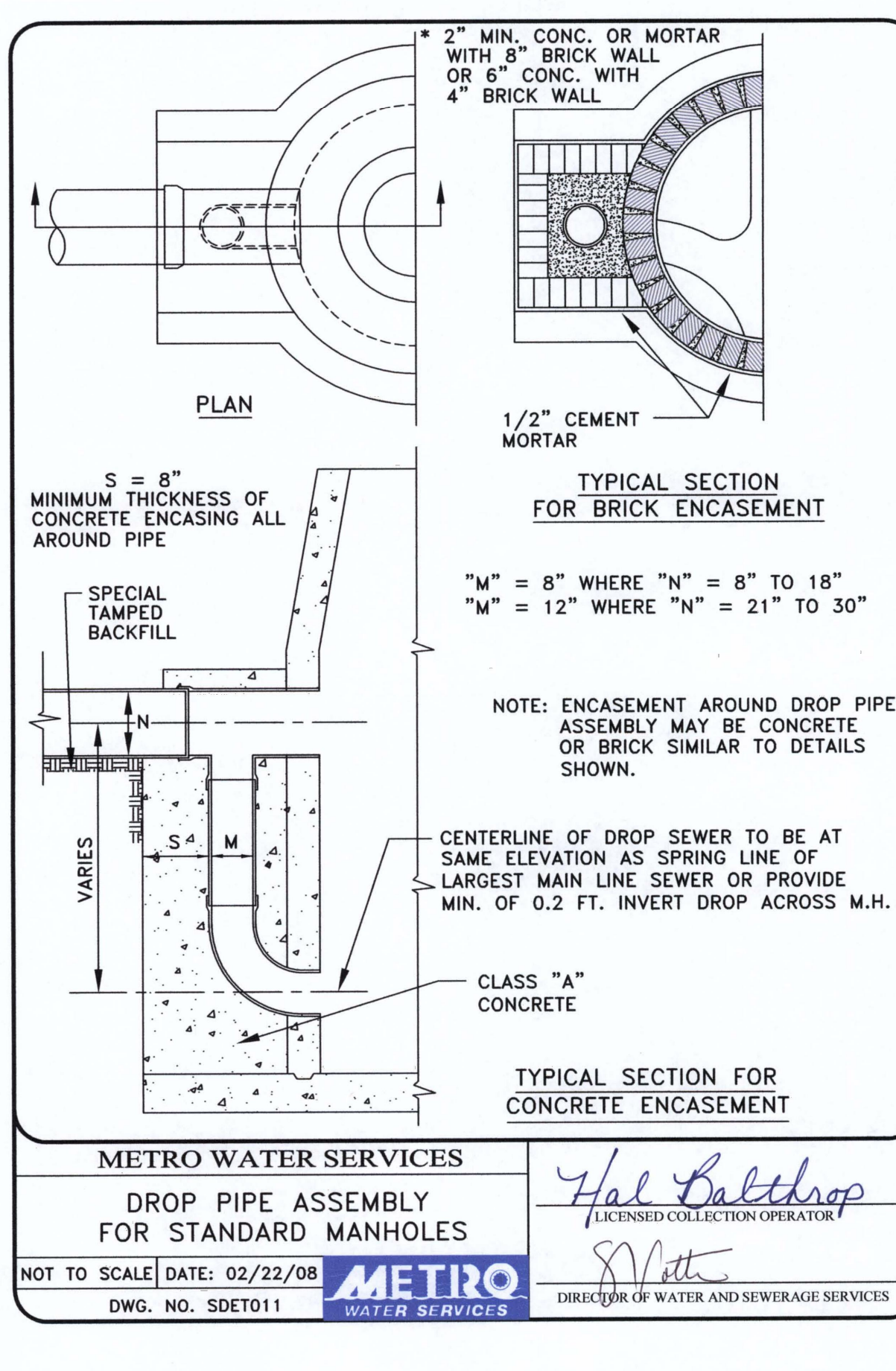
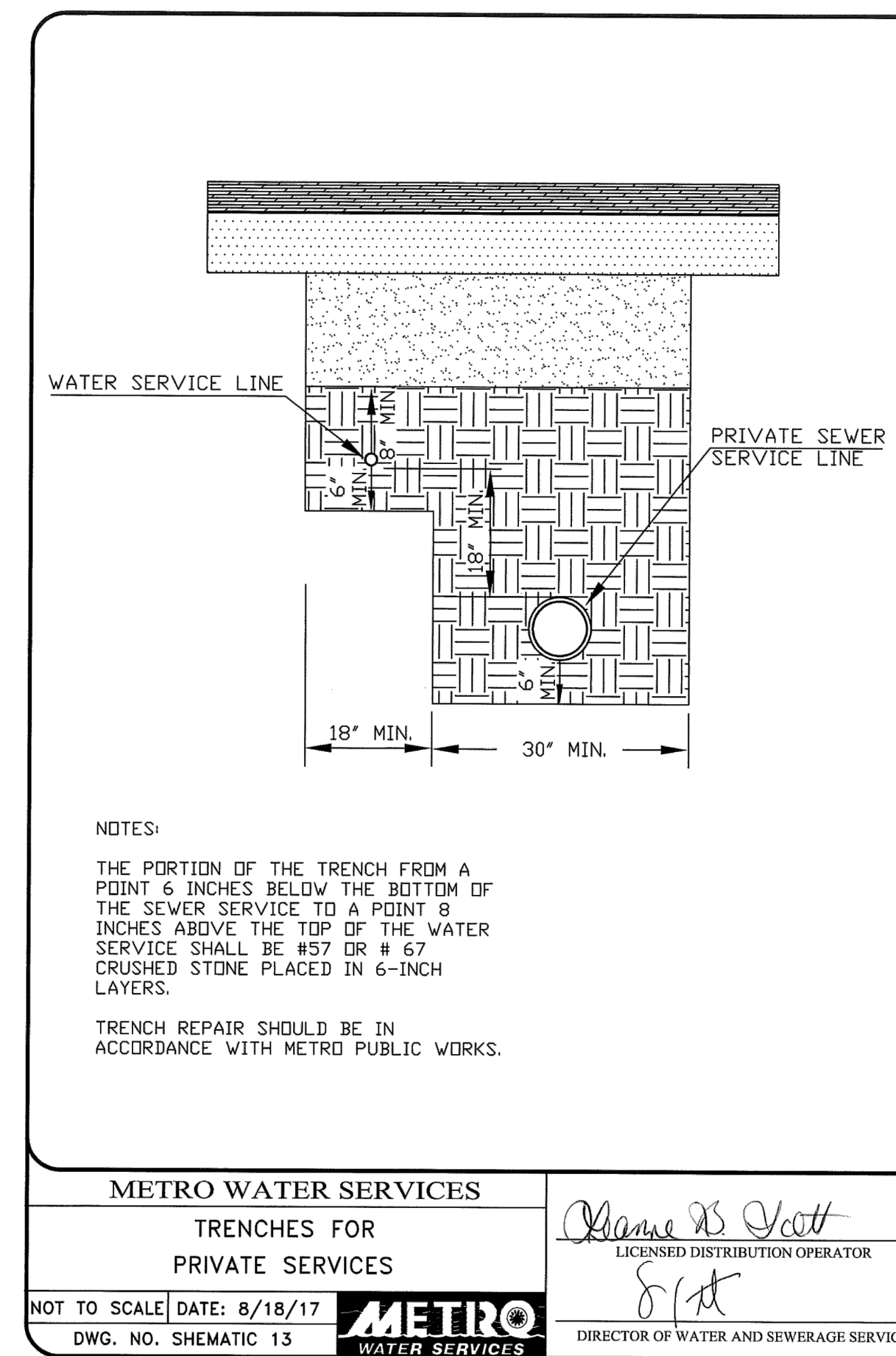
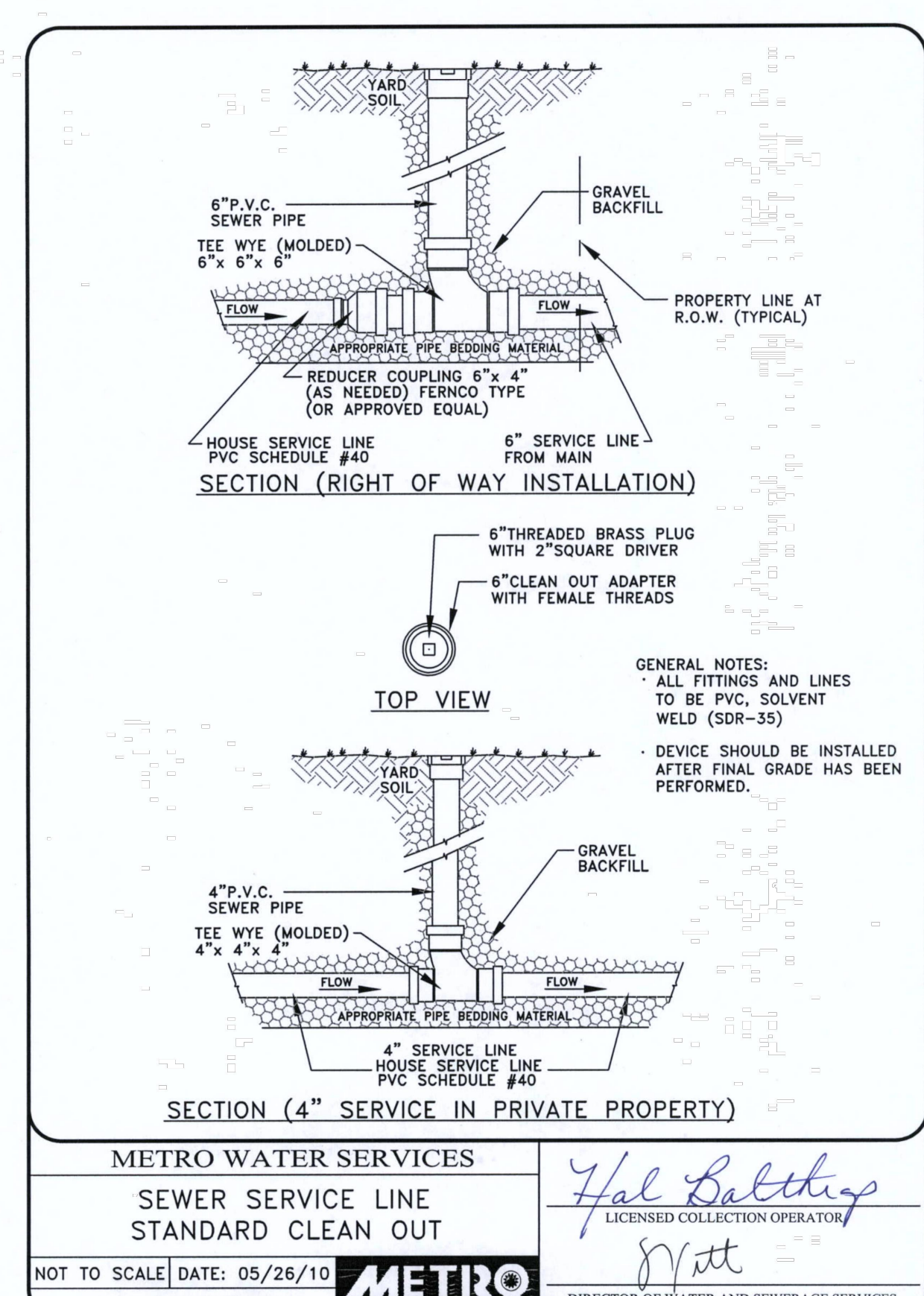
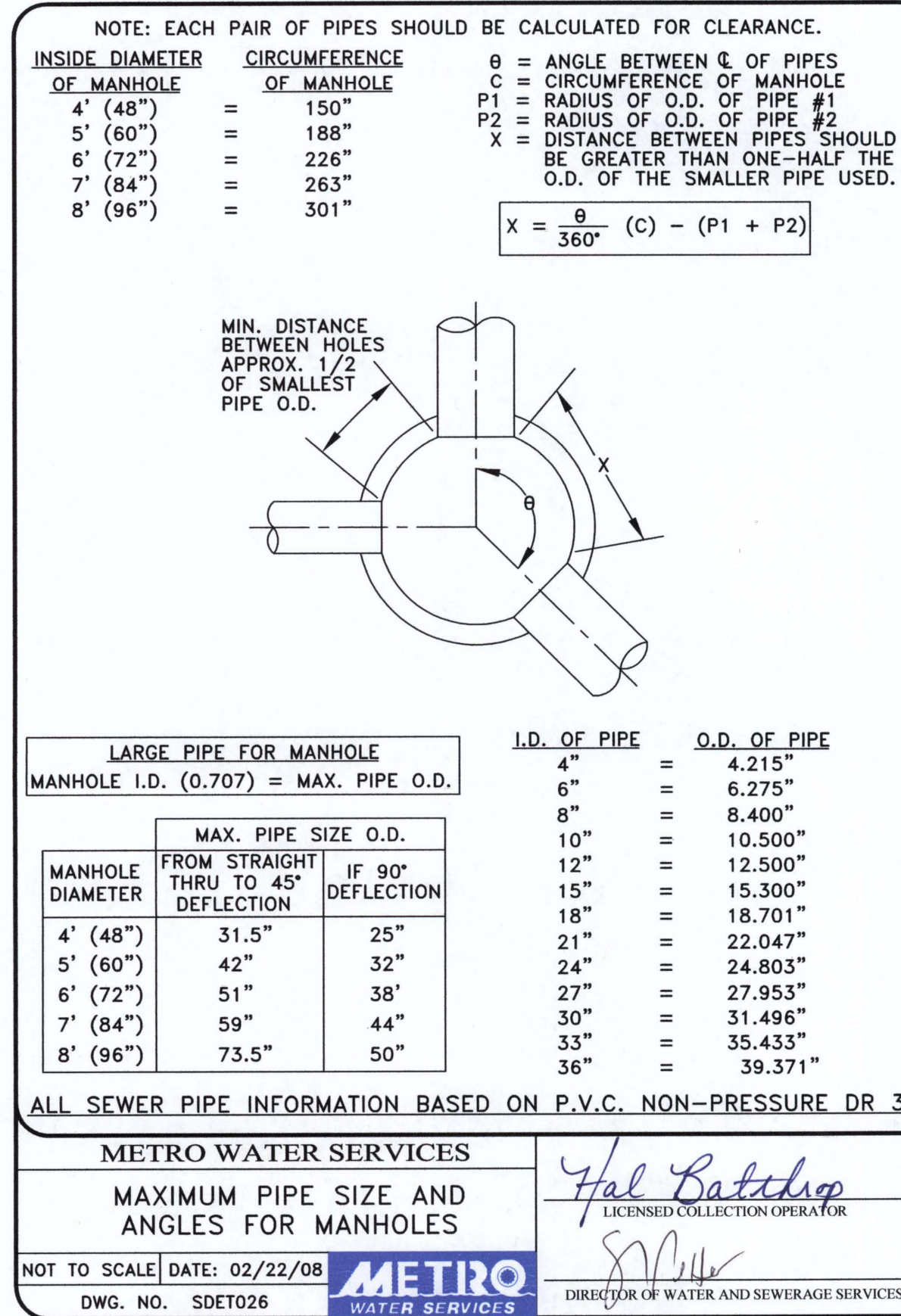
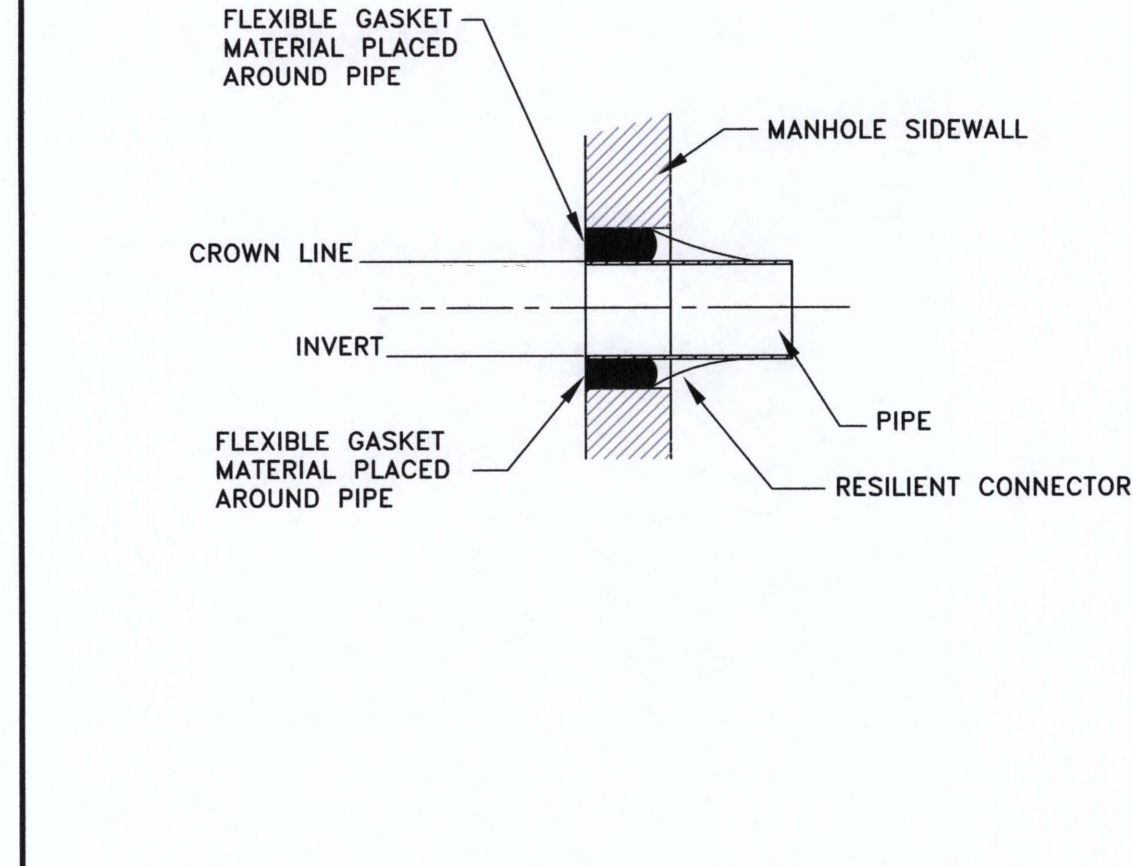
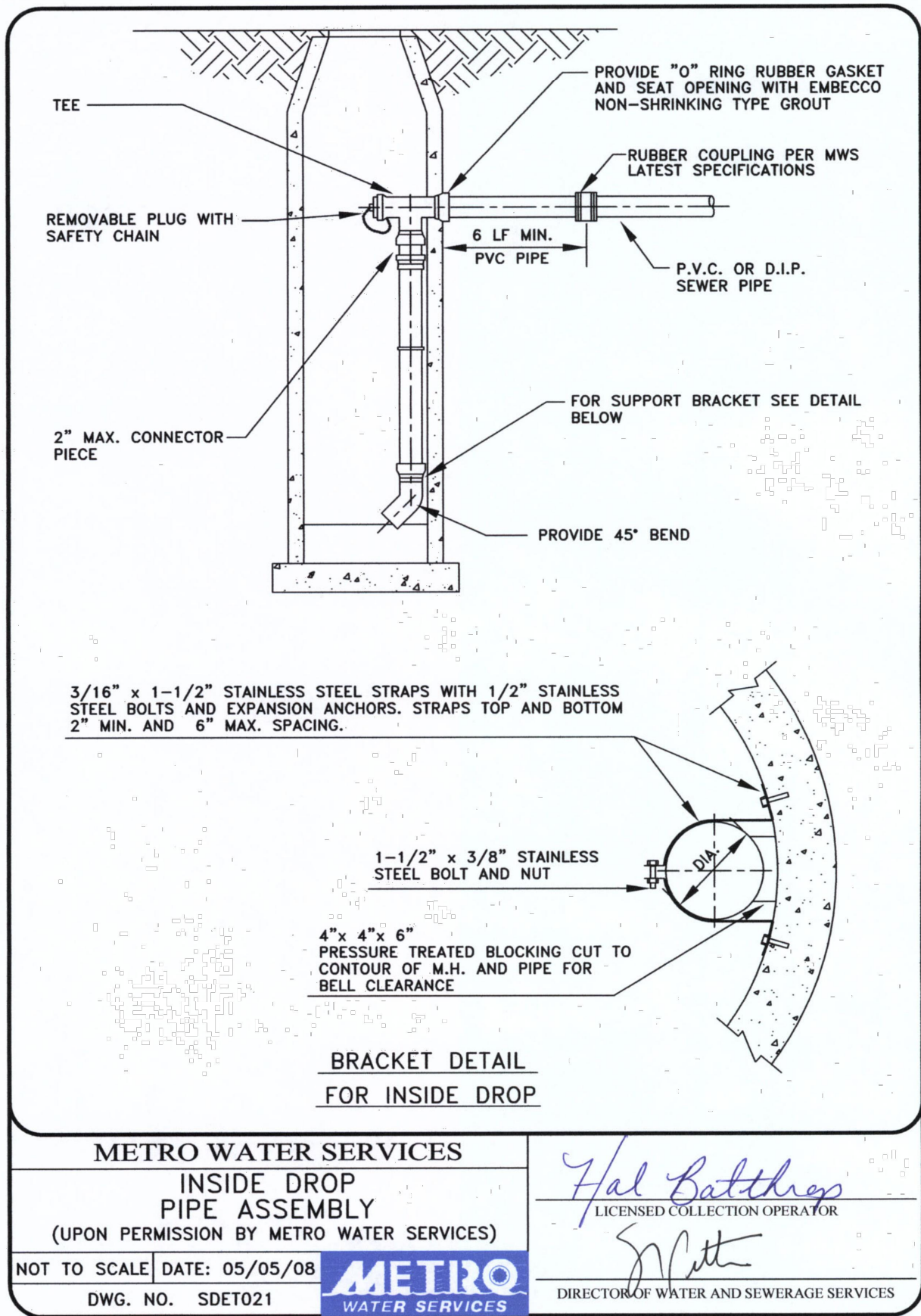
PROJ # 180050  
DWG NAME 180050 COLDING  
ISSUE DATE 11/30/2018  
PROJ FIRM LLC

UTILITY DETAILS I

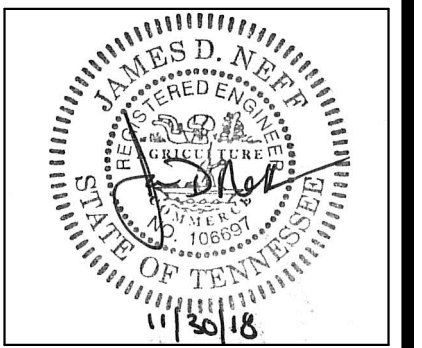
C04.1  
SHEET NUMBER

ISSUE FOR PERMIT





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14491 N DALE HARRY HWY  
SUITE 250  
TAMPA, FL 33618  
813.367.0084



PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:  
PANDA EXPRESS, INC.  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

| REVISION HISTORY |                   |
|------------------|-------------------|
| 1                | ISSUED FOR PERMIT |
| 2                |                   |
| 3                |                   |
| 4                |                   |
| 5                |                   |
| 6                |                   |
| 7                |                   |
| 8                |                   |
| 9                |                   |
| 10               |                   |

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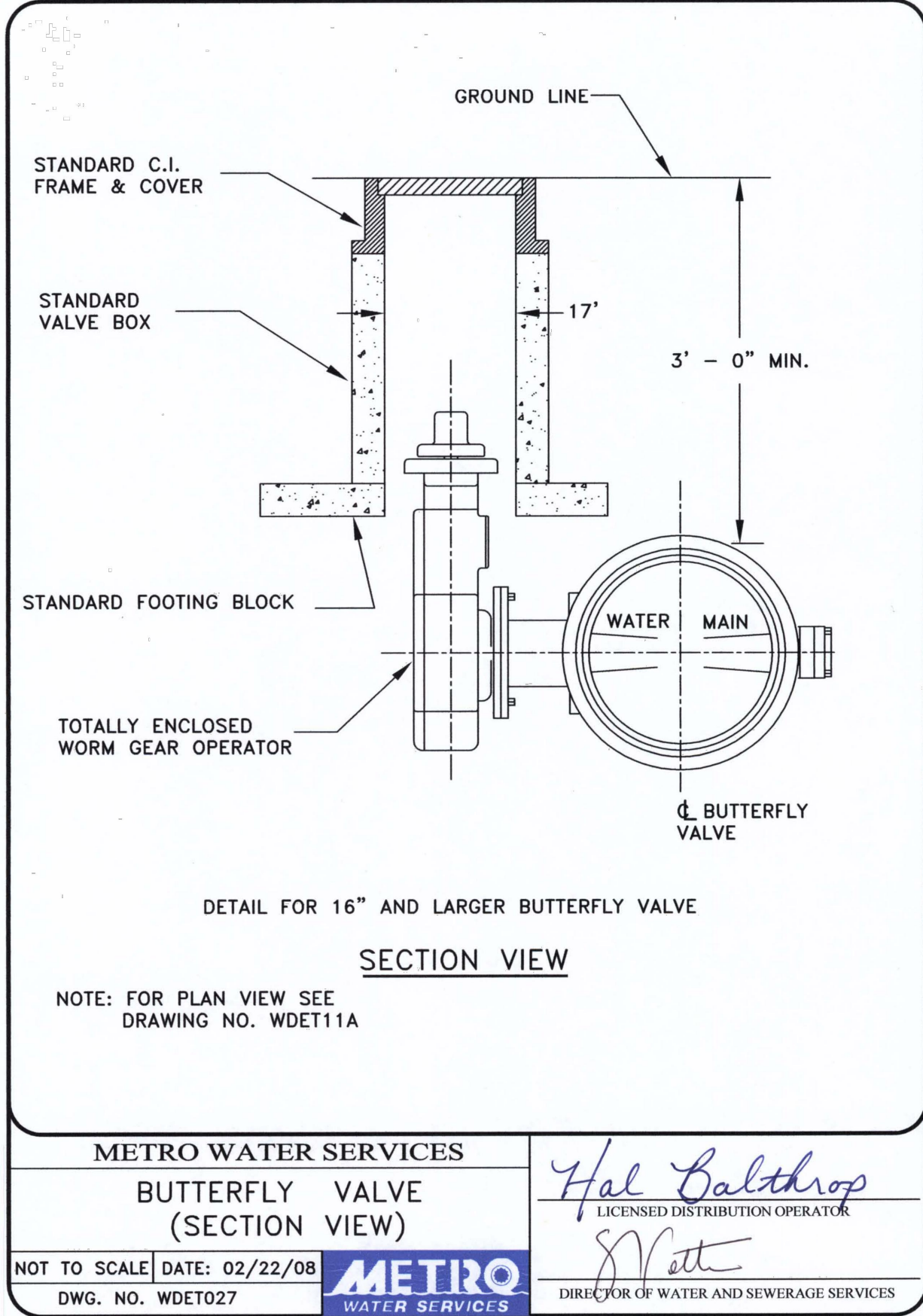
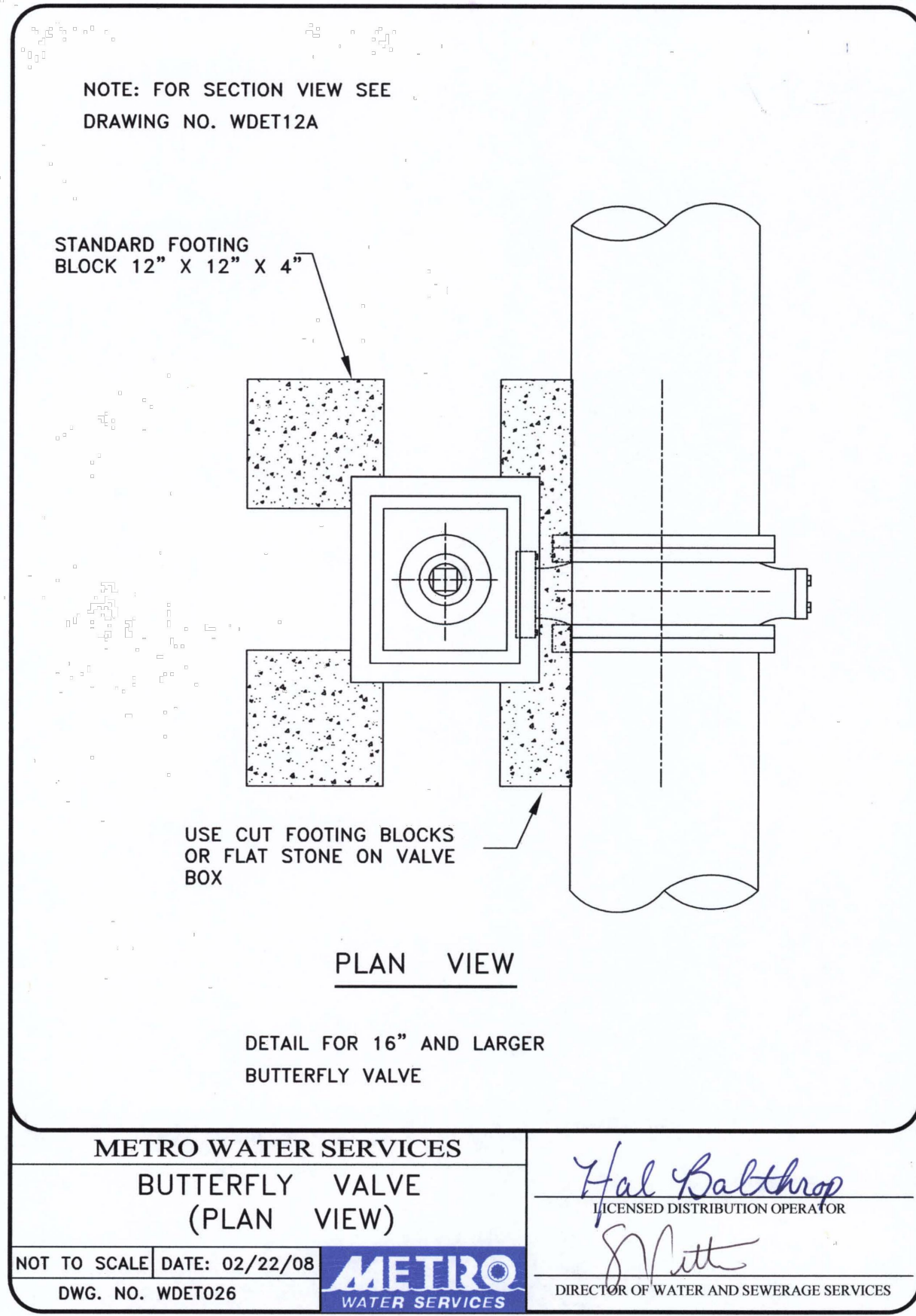
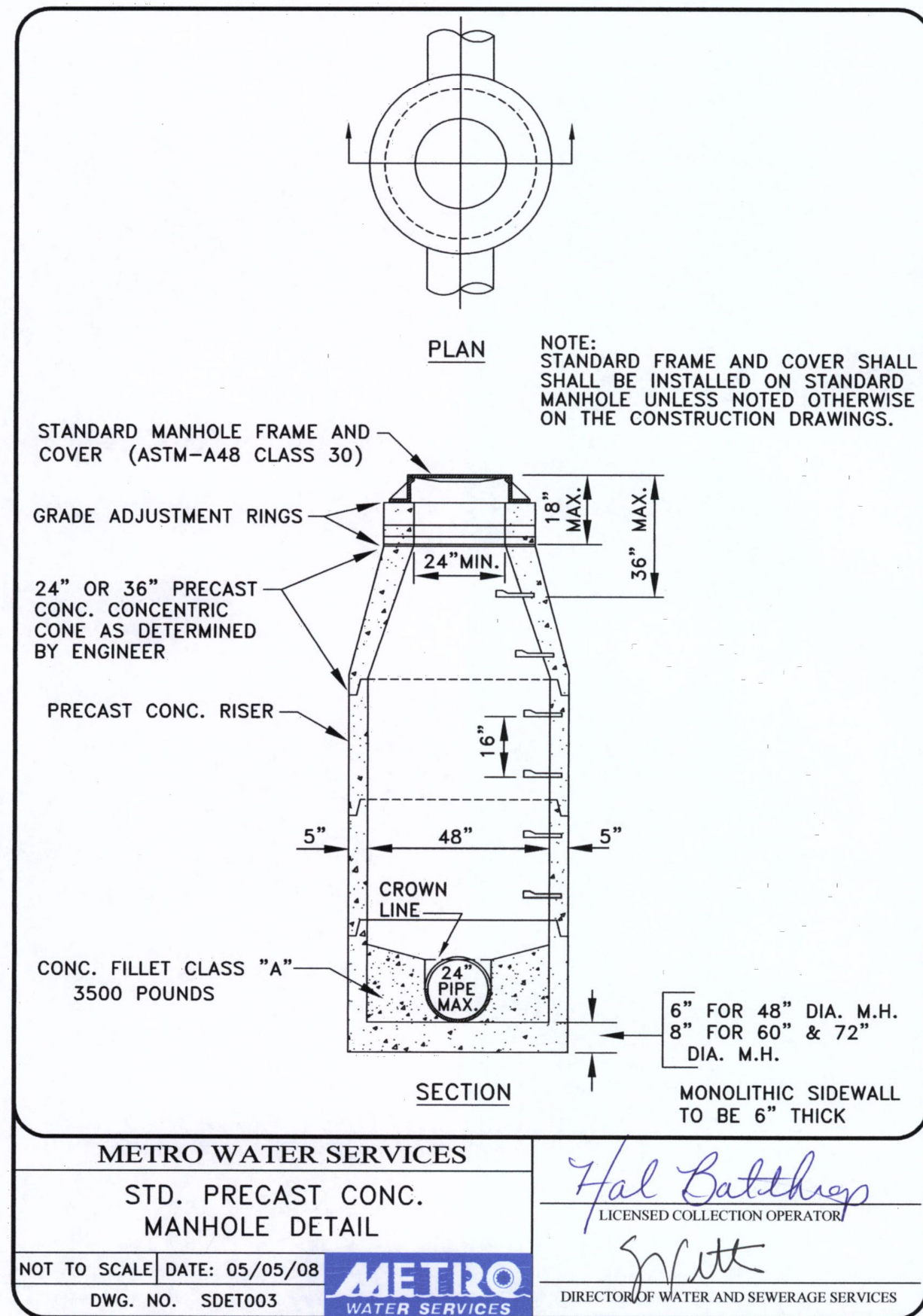
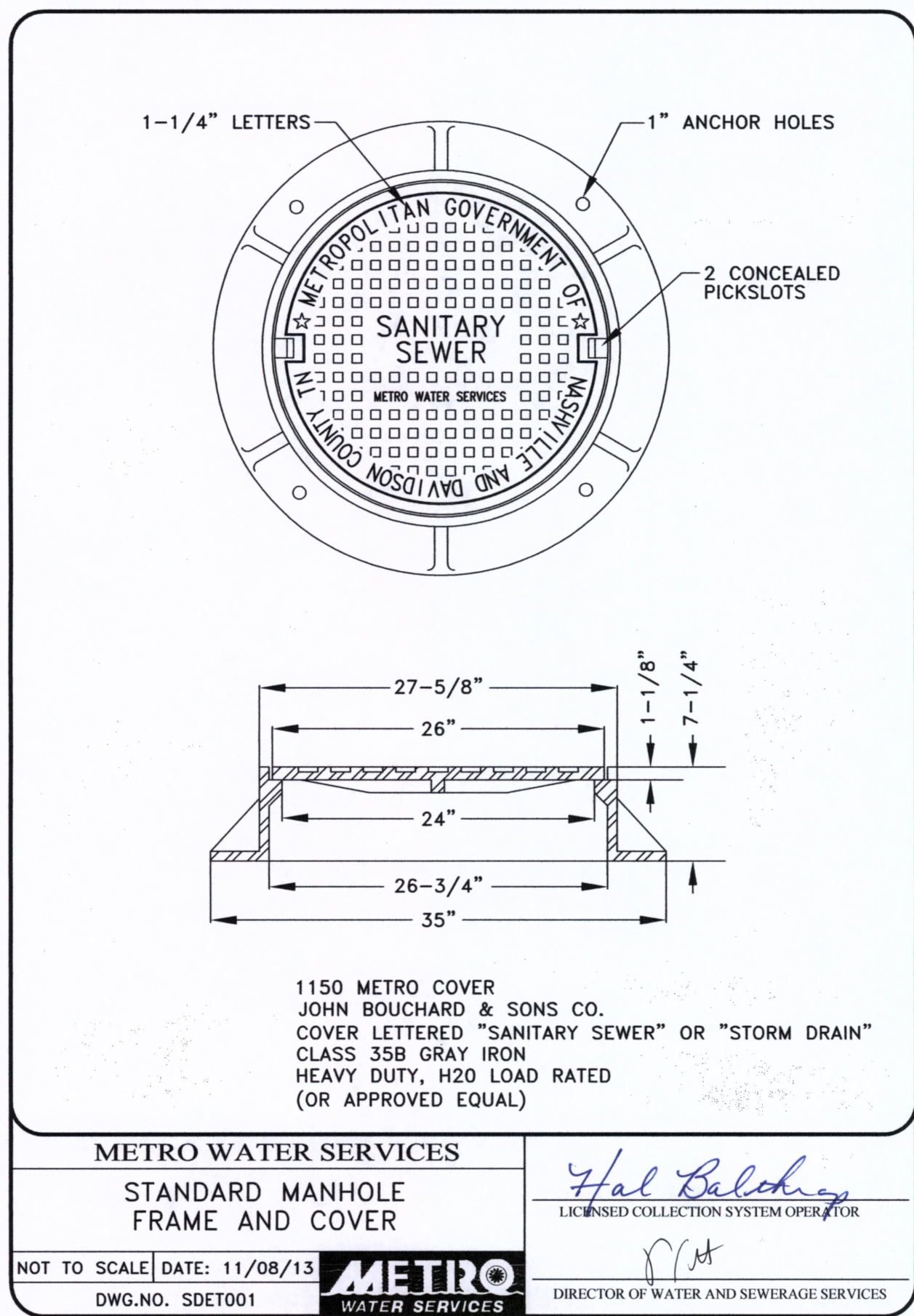
PROJ # 180050  
DWG NAME 180050 COALDING  
ISSUE DATE 11/30/2018  
PROJ TGR LLC

UTILITY DETAILS II

C04.2  
SHEET NUMBER

ISSUE FOR PERMIT

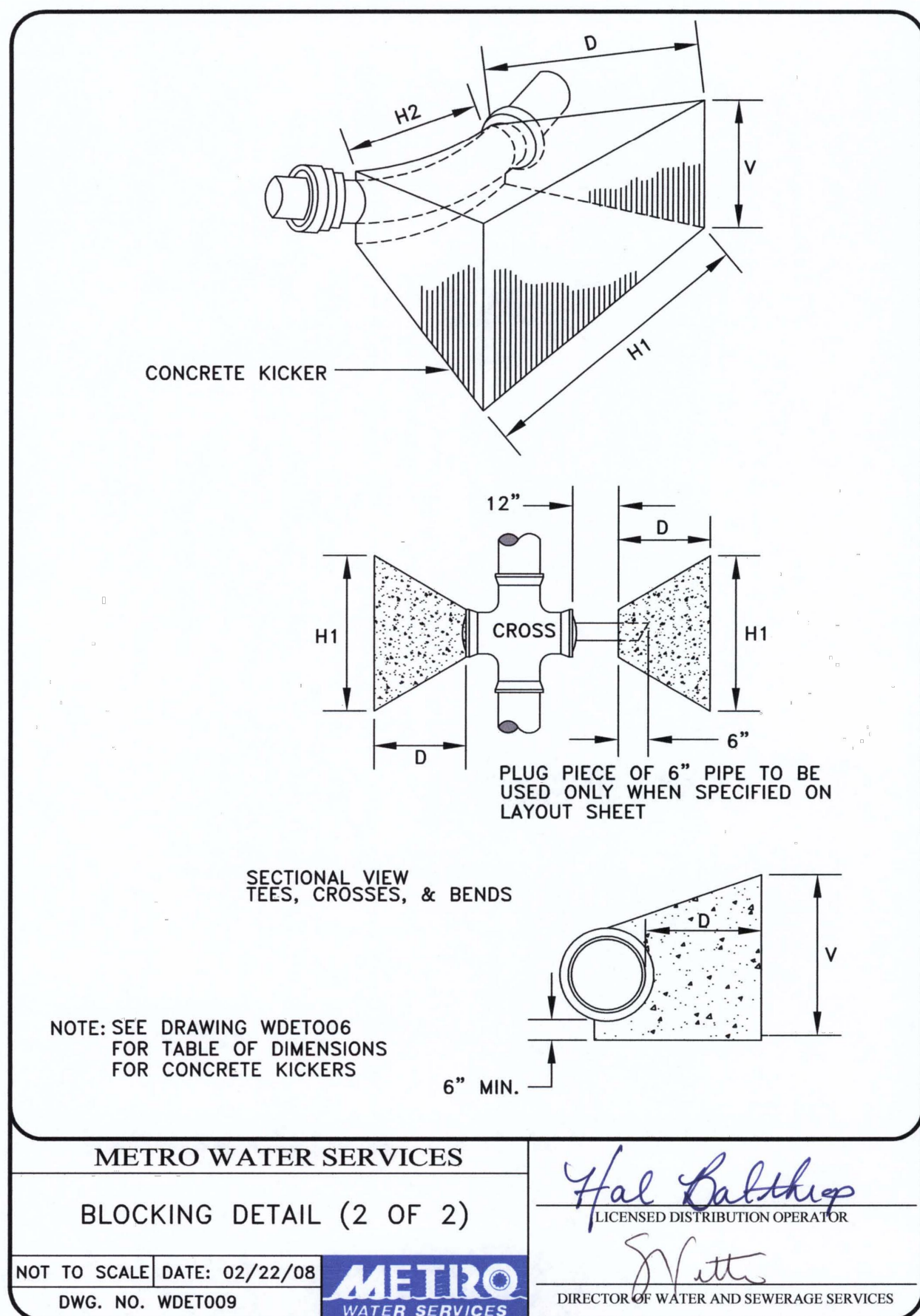
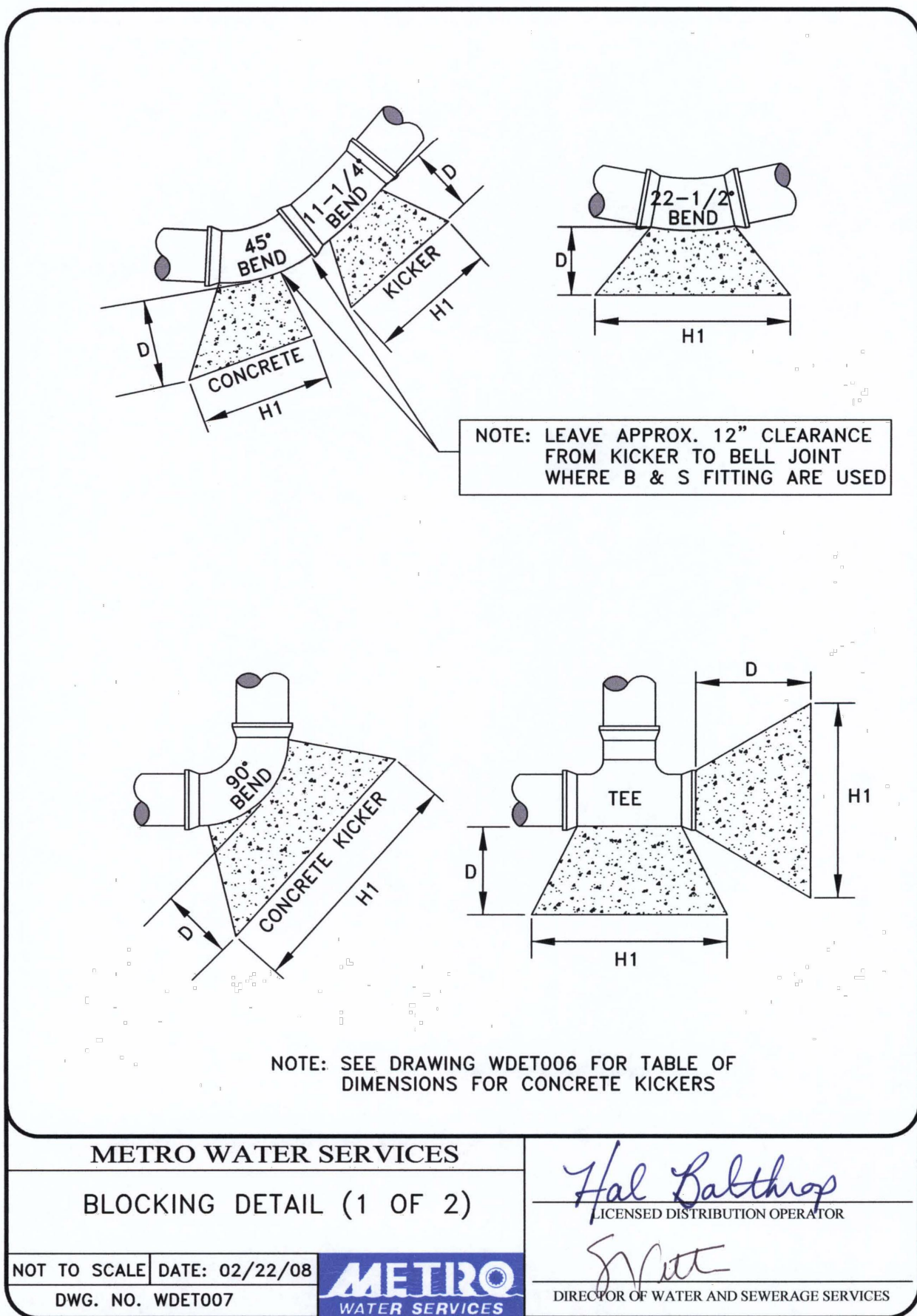




1 MANHOLE FRAME NTS

2 PRECAST CONCRETE MANHOLE NTS

3 BUTTERFLY VALVE NTS



| TABLE OF DIMENSIONS FOR CONCRETE KICKERS |    | 2" & 2-1/4" | 3" & 4" | 6"   | 8"   | 10"  | 12"  | 16"   | 18" | 20" | 24" | 30" | 36" |
|--|----|-------------|---------|------|------|------|------|-------|-----|-----|-----|-----|-----|
| TAPPING SLICES<br>FEET                   | H1 | 18"         | 24"     | 24"  | 36"  | 48"  | 54"  | 66"   |     |     |     |     |     |
|  | H2 | 10"         | 12"     | 16"  | 18"  | 24"  | 30"  | 36"   | 36" | 38" | 42" | 52" | 58" |
|  | V  | 12"         | 12"     | 18"  | 18"  | 18"  | 24"  | 36"   |     |     |     |     |     |
|  | D  | 18"         | 18"     | 18"  | 18"  | 24"  | 24"  | 24"   | 24" | 24" | 24" | 24" | 24" |
| 90° BENDS                                | H1 | 18"         | 24"     | 30"  | 39"  | 54"  | 54"  | 69"   |     |     |     |     |     |
|  | H2 | 10"         | 12"     | 16"  | 18"  | 32"  | 32"  | 48"   | 48" | 48" | 60" | 72" | 96" |
|  | V  | 12"         | 12"     | 18"  | 24"  | 24"  | 36"  | 48"   |     |     |     |     |     |
|  | D  | 18"         | 18"     | 18"  | 18"  | 24"  | 24"  | 24"   | 24" | 24" | 24" | 24" | 24" |
| 45° BENDS                                | H1 | 18"         | 18"     | 18"  | 18"  | 18"  | 24"  | 24"   | 24" | 24" | 24" | 24" | 24" |
|  | H2 | 6"          | 8"      | 10"  | 11"  | 18"  | 18"  | 30"   | 30" | 40" | 48" | 48" | 72" |
|  | V  | 12"         | 12"     | 16"  | 18"  | 21"  | 24"  | 36"   |     |     |     |     |     |
|  | D  | 18"         | 18"     | 18"  | 18"  | 18"  | 24"  | 24"   | 24" | 24" | 24" | 24" | 24" |
| 12-1/2° BENDS                            | H1 | 18"         | 18"     | 24"  | 24"  | 24"  | 24"  | 36"   |     |     |     |     |     |
|  | H2 | 6"          | 8"      | 10"  | 11"  | 18"  | 18"  | 30"   | 30" | 36" | 42" | 48" | 72" |
|  | V  | 12"         | 12"     | 16"  | 18"  | 21"  | 24"  | 27"   |     |     |     |     |     |
|  | D  | 18"         | 18"     | 18"  | 18"  | 18"  | 24"  | 24"   | 24" | 24" | 24" | 24" | 24" |
| 11-1/4° BENDS                            | H1 | 18"         | 18"     | 24"  | 24"  | 24"  | 24"  | 27"   |     |     |     |     |     |
|  | H2 | 6"          | 8"      | 10"  | 11"  | 18"  | 18"  | 30"   | 30" | 40" | 42" | 48" | 48" |
|  | V  | 12"         | 12"     | 16"  | 16"  | 21"  | 21"  | 27"   |     |     |     |     |     |
|  | D  | 18"         | 18"     | 18"  | 18"  | 18"  | 24"  | 24"   |     |     |     |     |     |
| CU. FT.                                  |    | 1.50        | 1.60    | 3.20 | 3.40 | 4.60 | 6.80 | 11.80 |     |     |     |     |     |
| CU. FT.                                  |    | 1.50        | 1.60    | 3.20 | 3.40 | 4.60 | 6.10 | 9.10  |     |     |     |     |     |

NOTE: CONCRETE USED FOR BLOCKING SHALL BE (CLASS "A"-3500# PER SQ. IN.). EARTH PRESSURES ARE FIGURED AT (4000# PER SQ. FT.) BEARING AREA OF KICKERS SHALL BE INCREASED WHEN POURED AGAINST SAND, LOOSE FILL, WET EARTH, CINDERS, ETC.

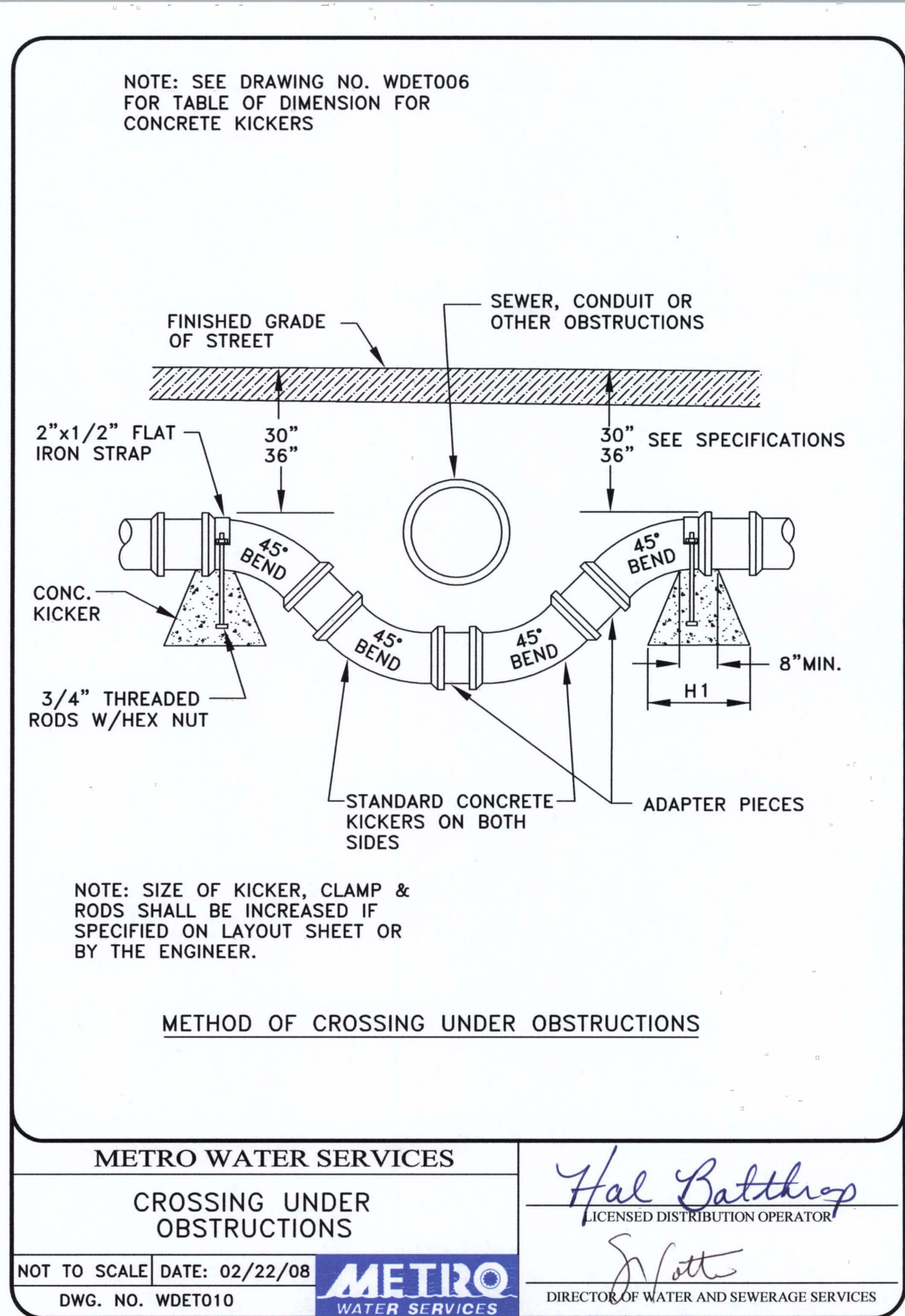
TABLE BASED ON 225 P.S.I. OR 150 P.S.I. WORKING PRESSURE PLUS 50% WATER HAMMER

METRO WATER SERVICES  
TABLE OF DIMENSIONS

Hal Balthrop  
LICENSED DISTRIBUTION OPERATOR

NOT TO SCALE DATE: 05/05/08  
DWG. NO. WDET006

METRO WATER SERVICES  
DIRECTOR OF WATER AND SEWERAGE SERVICES



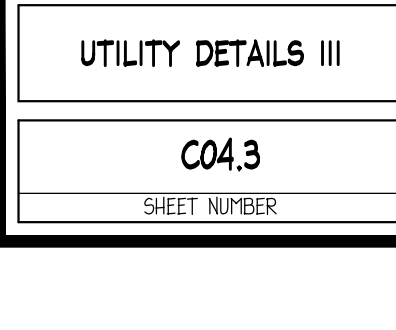
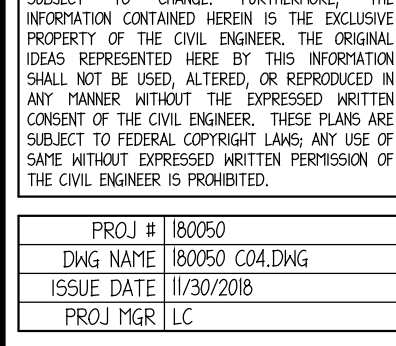
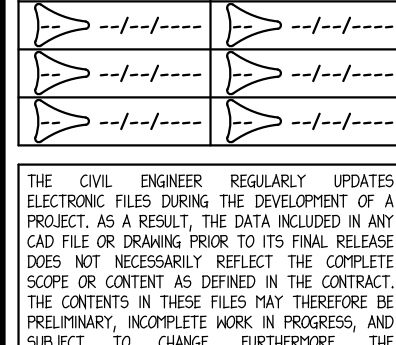
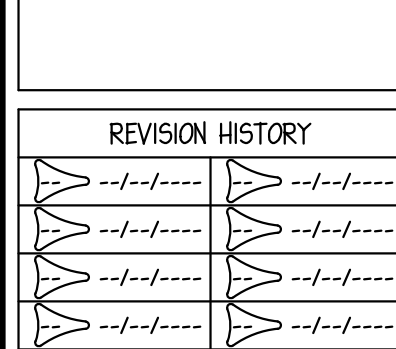
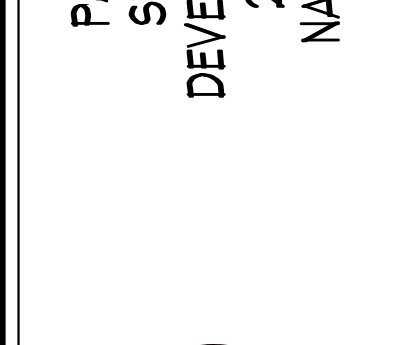
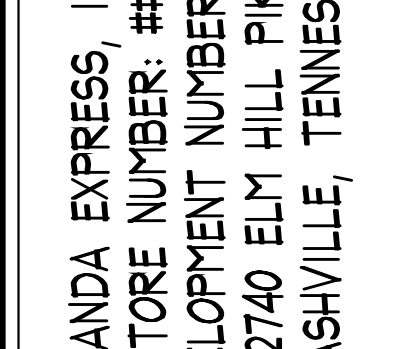
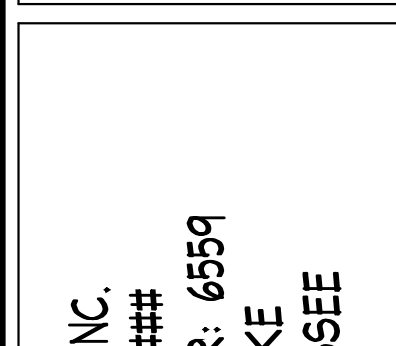
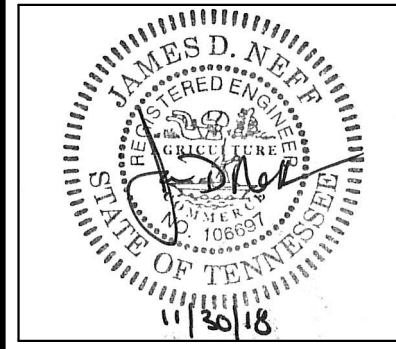
4 CONCRETE KICKER NTS

5 UTILITY CROSSING NTS



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SUITE 250  
TAMPA, FL 33608  
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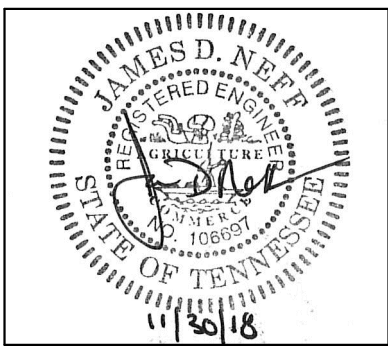
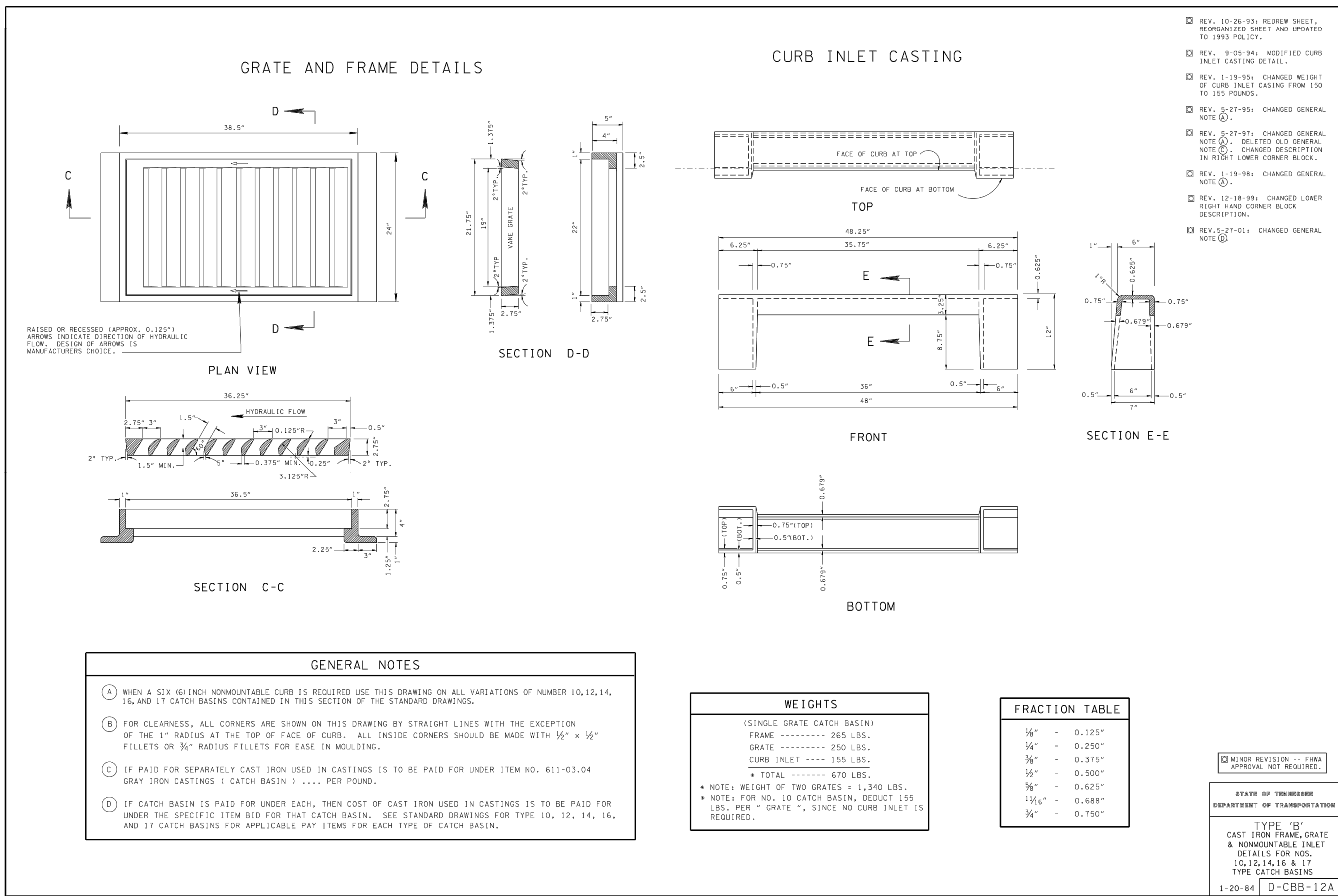
UTILITY DETAILS III

C04.3

SHEET NUMBER

ISSUE FOR PERMIT





CLIENT:

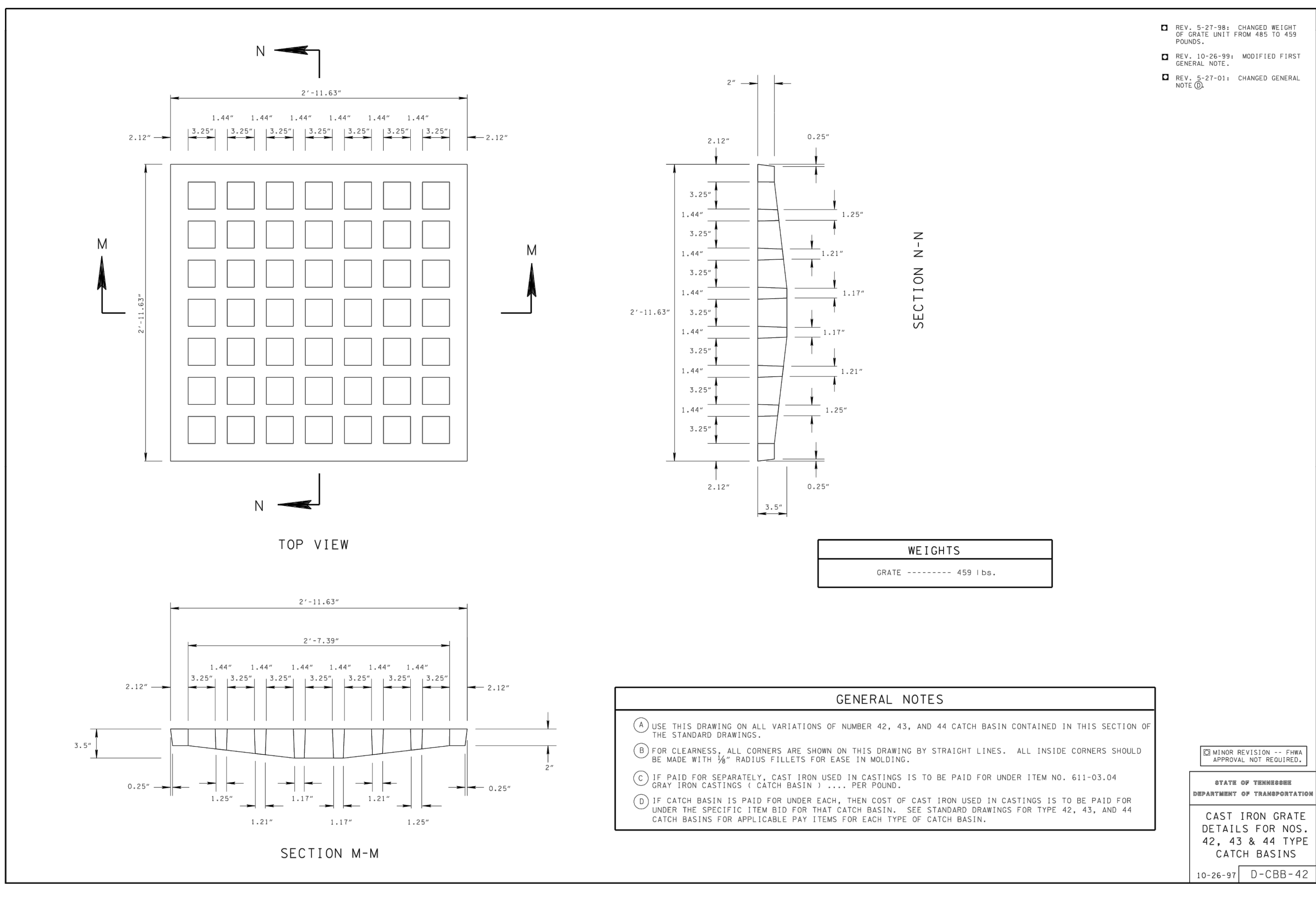
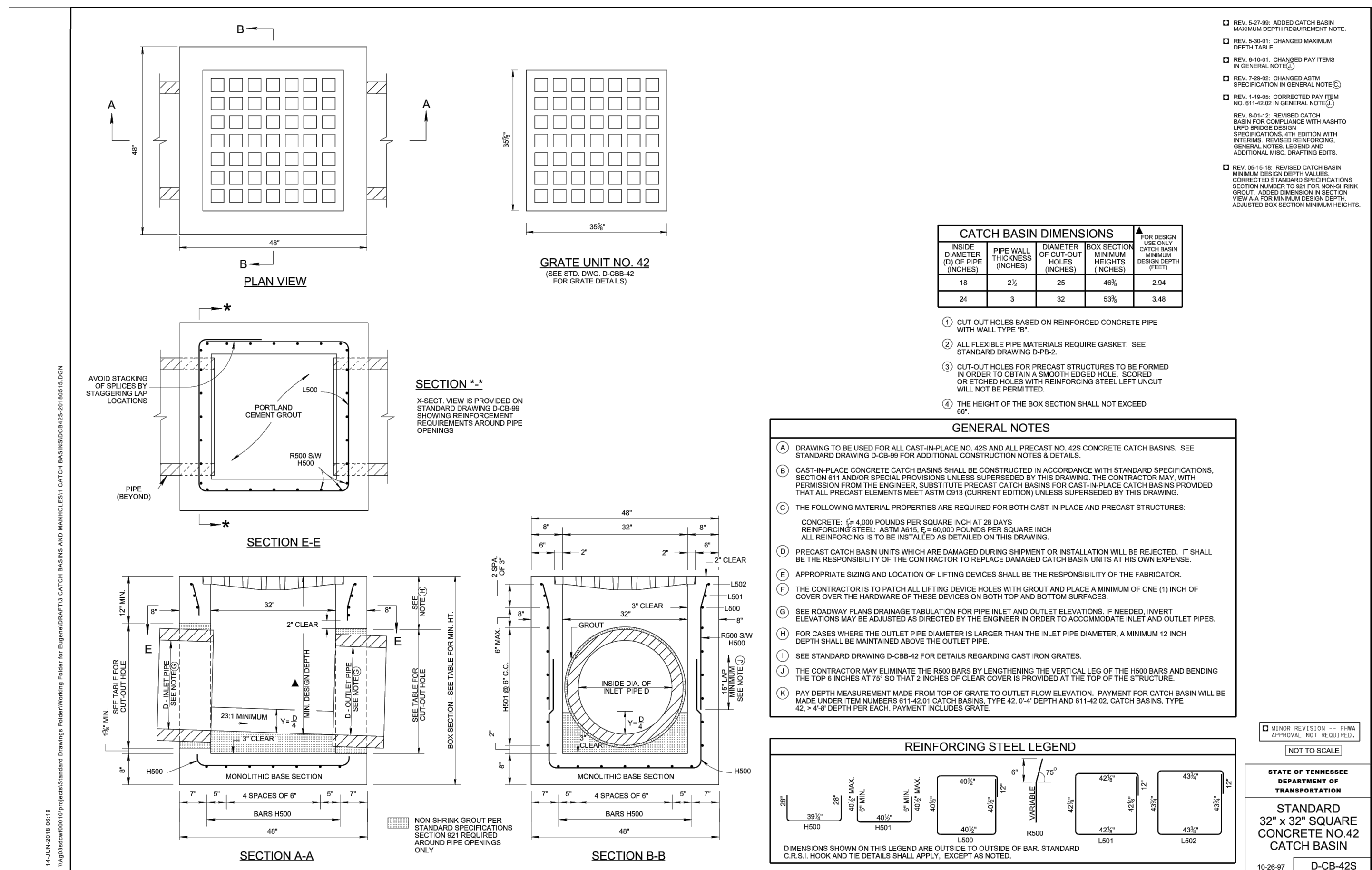
## REVISION HISTORY

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## UTILITY DETAILS IV

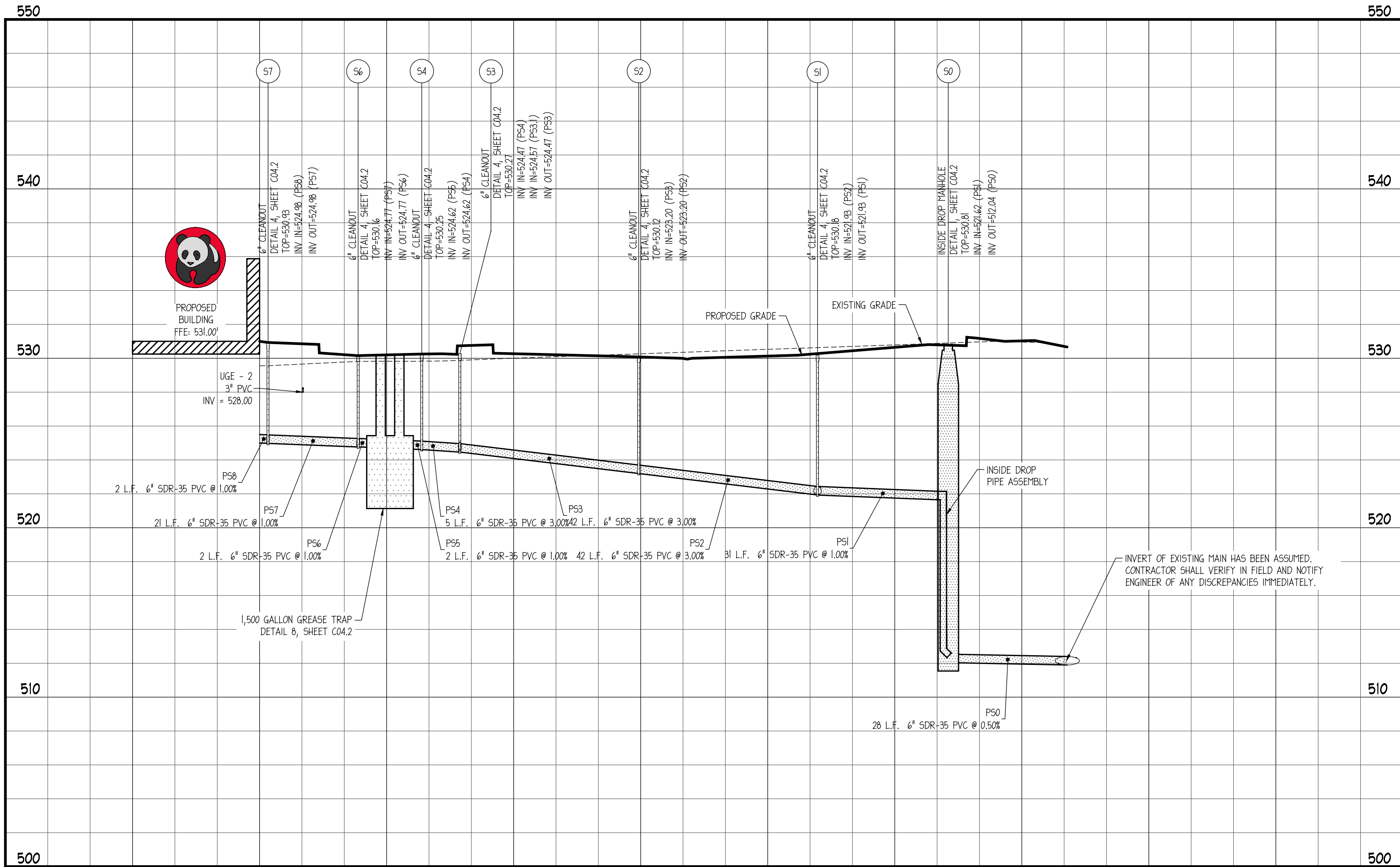
C04.4

SHEET NUMBER



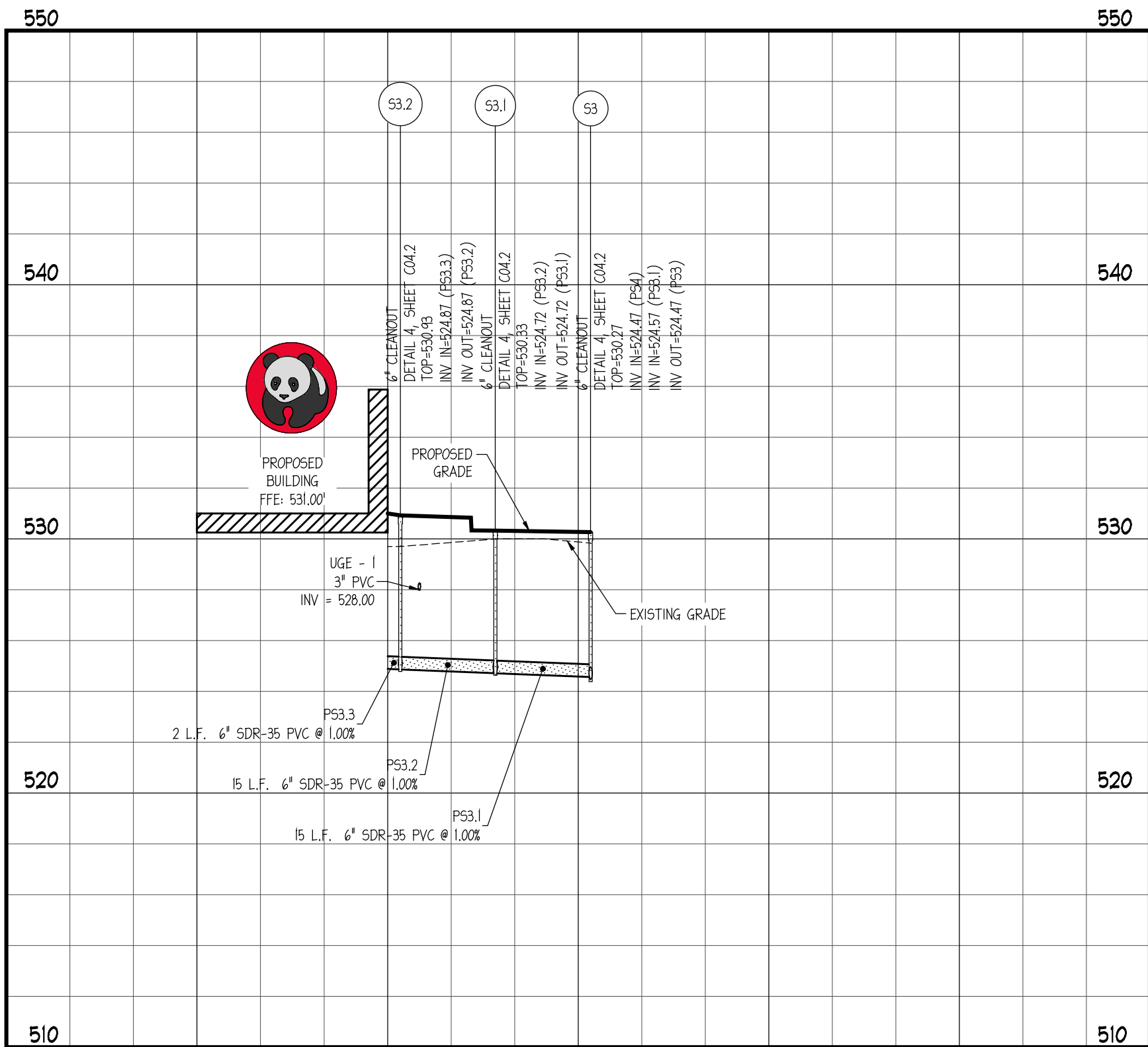


SANITARY PROFILE S8 TO S0



HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=5'

SANITARY PROFILE S3.3 TO S3



HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=5'

| SANITARY STRUCTURE TABLE |   |               |                                |                |
|--------------------------|---|---------------|--------------------------------|----------------|
| STRUCTURE NAME           | STRUCTURE TYPE                                    | RIM ELEVATION | INVERT IN                      | INVERT OUT     |
| S0                       | INSIDE DROP MANHOLE<br>DETAIL 1, SHEET C04.2      | 530.81        | 521.62 (P51)                   | 512.04 (P50)   |
| S1                       | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.18        | 521.93 (P52)                   | 521.93 (P51)   |
| S2                       | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.12        | 523.20 (P53)                   | 523.20 (P52)   |
| S3                       | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.27        | 524.47 (P54)<br>524.57 (P53.1) | 524.47 (P53)   |
| S3.1                     | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.33        | 524.72 (P53.2)                 | 524.72 (P53.1) |
| S3.2                     | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.93        | 524.87 (P53.3)                 | 524.87 (P53.2) |
| S3.3                     | BUILDING STUB                                     | 531.00        |                                | 524.89 (P53.3) |
| S4                       | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.25        | 524.62 (P55)                   | 524.62 (P54)   |
| S5                       | 1,500 GALLON GREASE TRAP<br>DETAIL 8, SHEET C04.2 | 530.30        |                                |                |
| S6                       | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.16        | 524.77 (P57)                   | 524.77 (P56)   |
| S7                       | 6" CLEANOUT<br>DETAIL 4, SHEET C04.2              | 530.93        | 524.96 (P58)                   | 524.96 (P57)   |
| S8                       | BUILDING STUB                                     | 531.00        |                                | 525.00 (P58)   |

| SANITARY PIPE TABLE |      |        |       |            |
|---------------------|------|--------|-------|------------|
| NAME                | SIZE | LENGTH | SLOPE | MATERIAL   |
| P50                 | 6"   | 28'    | 0.50% | SDR-35 PVC |
| P51                 | 6"   | 31'    | 1.00% | SDR-35 PVC |
| P52                 | 6"   | 42'    | 3.00% | SDR-35 PVC |
| P53                 | 6"   | 42'    | 3.00% | SDR-35 PVC |
| P53.1               | 6"   | 15'    | 1.00% | SDR-35 PVC |
| P53.2               | 6"   | 15'    | 1.00% | SDR-35 PVC |
| P53.3               | 6"   | 2'     | 1.00% | SDR-35 PVC |
| P54                 | 6"   | 9'     | 3.00% | SDR-35 PVC |
| P55                 | 6"   | 2'     | 1.00% | SDR-35 PVC |
| P56                 | 6"   | 2'     | 1.00% | SDR-35 PVC |
| P57                 | 6"   | 21'    | 1.00% | SDR-35 PVC |
| P58                 | 6"   | 2'     | 1.00% | SDR-35 PVC |

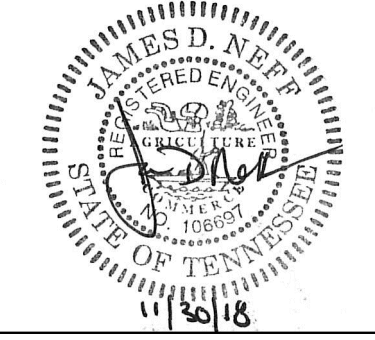
PROFILE NOTES

- CONTROLLED BACK FILL TO BE PLACED IN 6" LOOSE LIFT AND COMPACTED TO 100% ASTM D698 PRIOR TO STORM AND SANITARY SEWER CONSTRUCTION. BACK FILL SHALL BE PLACED TO A MINIMUM OF 12" ABOVE THE CROWN ELEVATION OF THE PIPES.
- STORM DRAIN AND SANITARY SEWER LENGTHS ARE MEASURED FROM CENTER LINE OF STRUCTURE TO CENTERLINE OF STRUCTURE OR FACE OF HEADWALL.
- ALL PIPE LENGTHS SHOWN ARE ROUNDED TO THE NEAREST FOOT.
- ALL STORM DRAIN PIPING SHALL BE TRENCHED, BEDDED AND BACK FILLED ACCORDING WITH **DETAIL 1 ON SHEET C04.1** UNLESS SPECIFICALLY NOTED OTHERWISE.
- ALL SANITARY SEWER PIPING SHALL BE TRENCHED, BEDDED AND BACK FILLED ACCORDING WITH **DETAIL 5 ON SHEET C04.2** UNLESS SPECIFICALLY NOTED OTHERWISE.
- UNFORESEEN SUBSURFACE CONDITIONS SHALL BE BROUGHT TO THE OWNER'S AND ENGINEER'S ATTENTION IMMEDIATELY IMPLEMENTATION OF CORRECTIVE BEDDING MEASURES WITHOUT THE OWNER'S APPROVAL SHALL BE AT THE CONTRACTOR'S OWN RISK AND AT NO ADDITIONAL COMPENSATION.
- EXISTING GRADES SHOWN ARE APPROXIMATE AND DO NOT REFLECT TOP SOIL REMOVAL, CLEARING, AND GRUBBING OPERATIONS. THE CONTRACTOR SHALL ASCERTAIN FOR HIMSELF THE EXTENT OF DISTURBANCE FOR THESE ACTIVITIES.
- THE CONTRACTOR SHALL REFERENCE THE GEOTECHNICAL REPORT PREPARED FOR THE OWNER FOR SUBSURFACE CONDITIONS. THE GEOTECHNICAL REPORT IS NOT A PART OF THE CONTRACT DOCUMENTS.
- EXCAVATIONS FOR STRUCTURES SHALL BE TAKEN AS A TRENCHING EXCAVATION WITHOUT FURTHER COMPENSATION.
- SEE SHEET C04.1 FOR GENERAL NOTES.



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SUITE 250  
TAMPA, FL 33618  
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PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:

PANDA EXPRESS, INC.  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

REVISION HISTORY

|    |                   |
|----|-------------------|
| 1  | ISSUED FOR PERMIT |
| 2  | ISSUED FOR PERMIT |
| 3  | ISSUED FOR PERMIT |
| 4  | ISSUED FOR PERMIT |
| 5  | ISSUED FOR PERMIT |
| 6  | ISSUED FOR PERMIT |
| 7  | ISSUED FOR PERMIT |
| 8  | ISSUED FOR PERMIT |
| 9  | ISSUED FOR PERMIT |
| 10 | ISSUED FOR PERMIT |

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PROJ # 180050  
DWG NAME 180050 C04.DWG  
ISSUE DATE 11/30/2018  
PROJ TGR, LLC

PROFILES 1

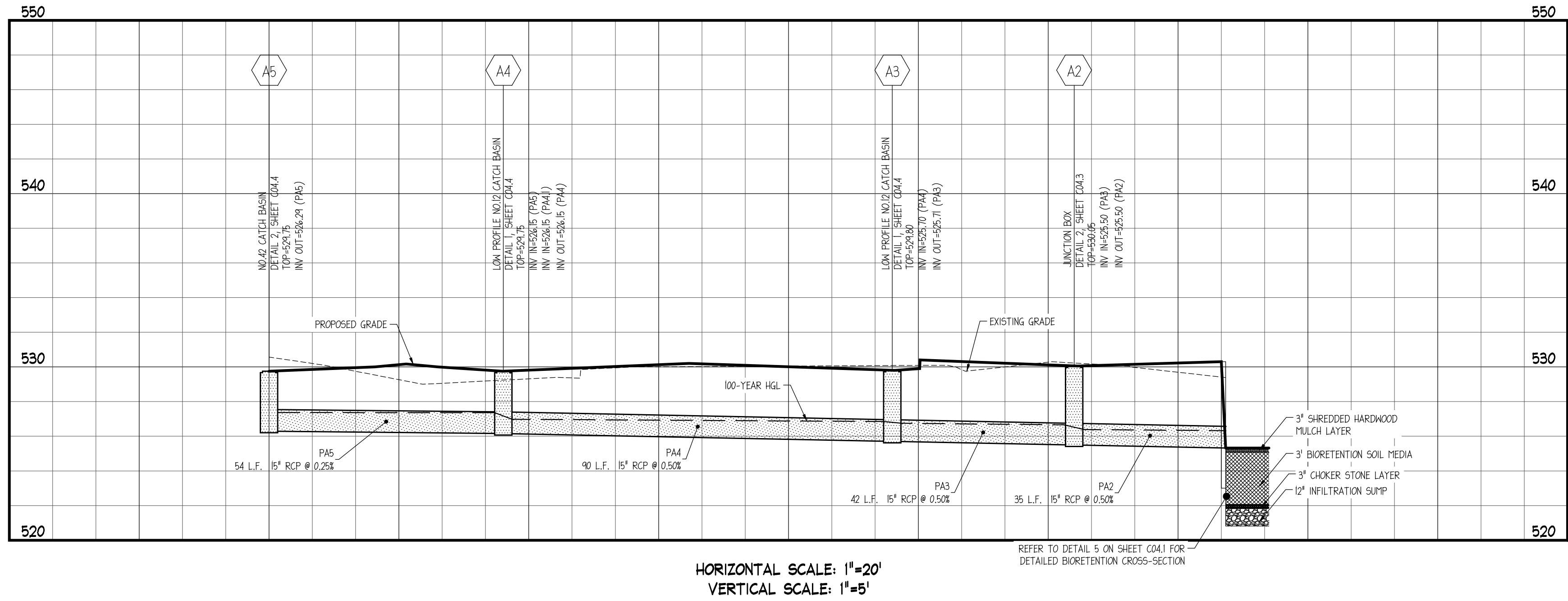
C04.5

SHEET NUMBER

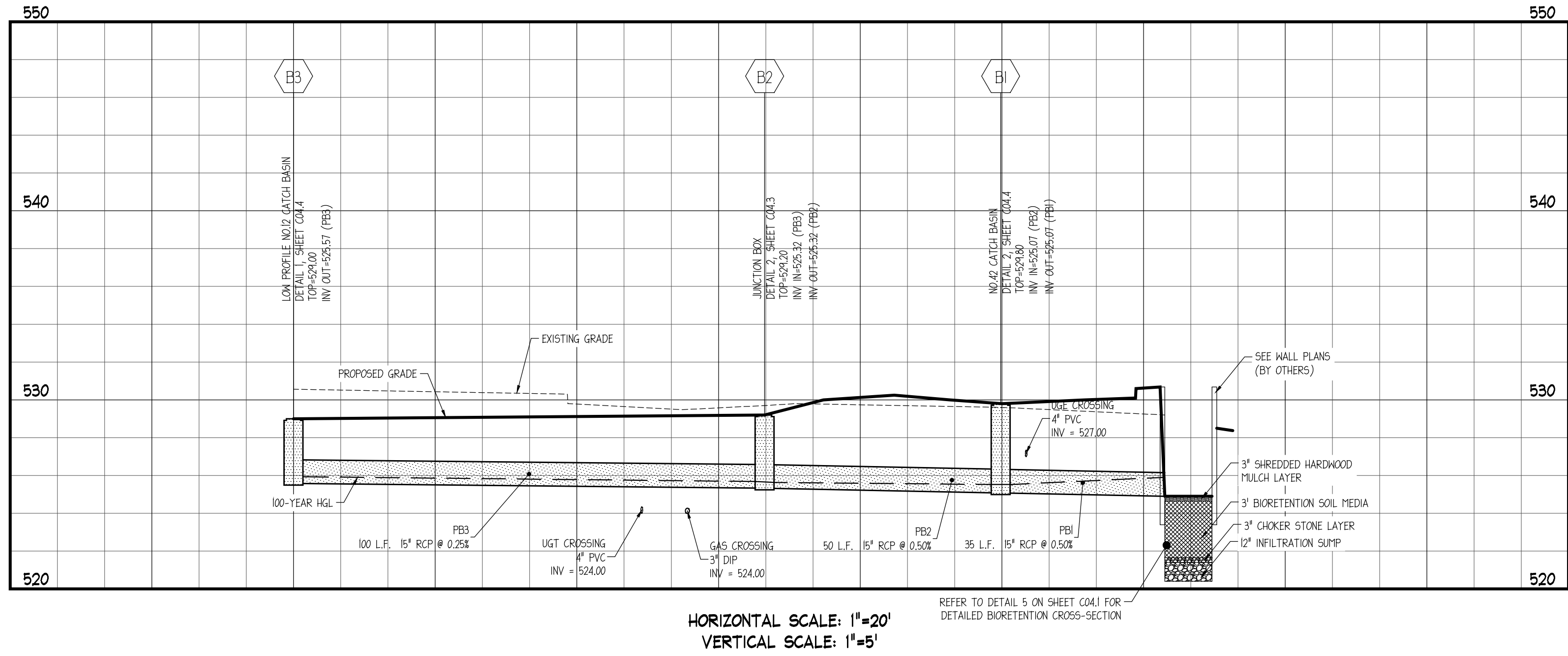
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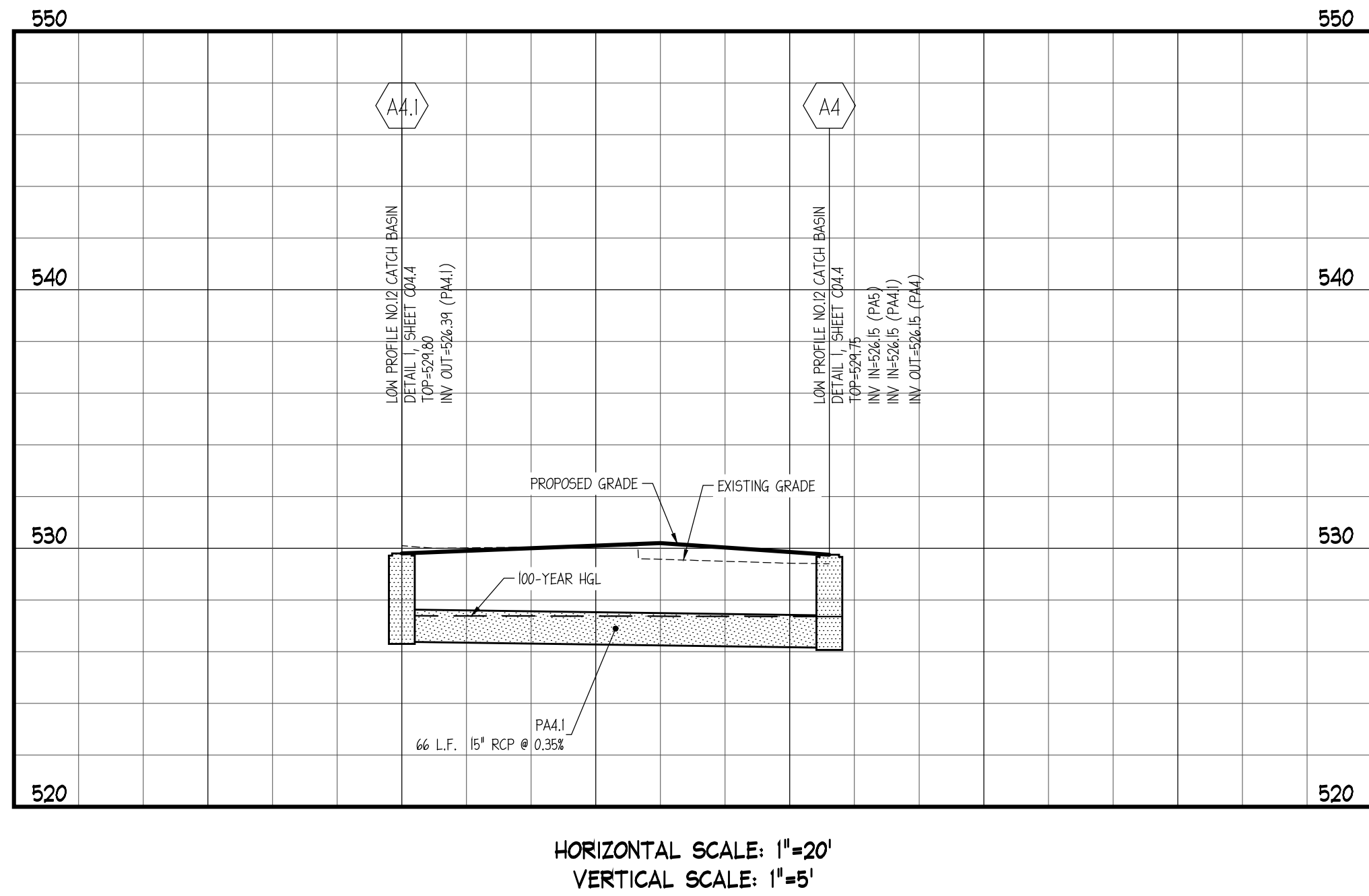
## STORM PROFILE A5-BIORETENTION



## STORM PROFILE B3-BIORETENTION



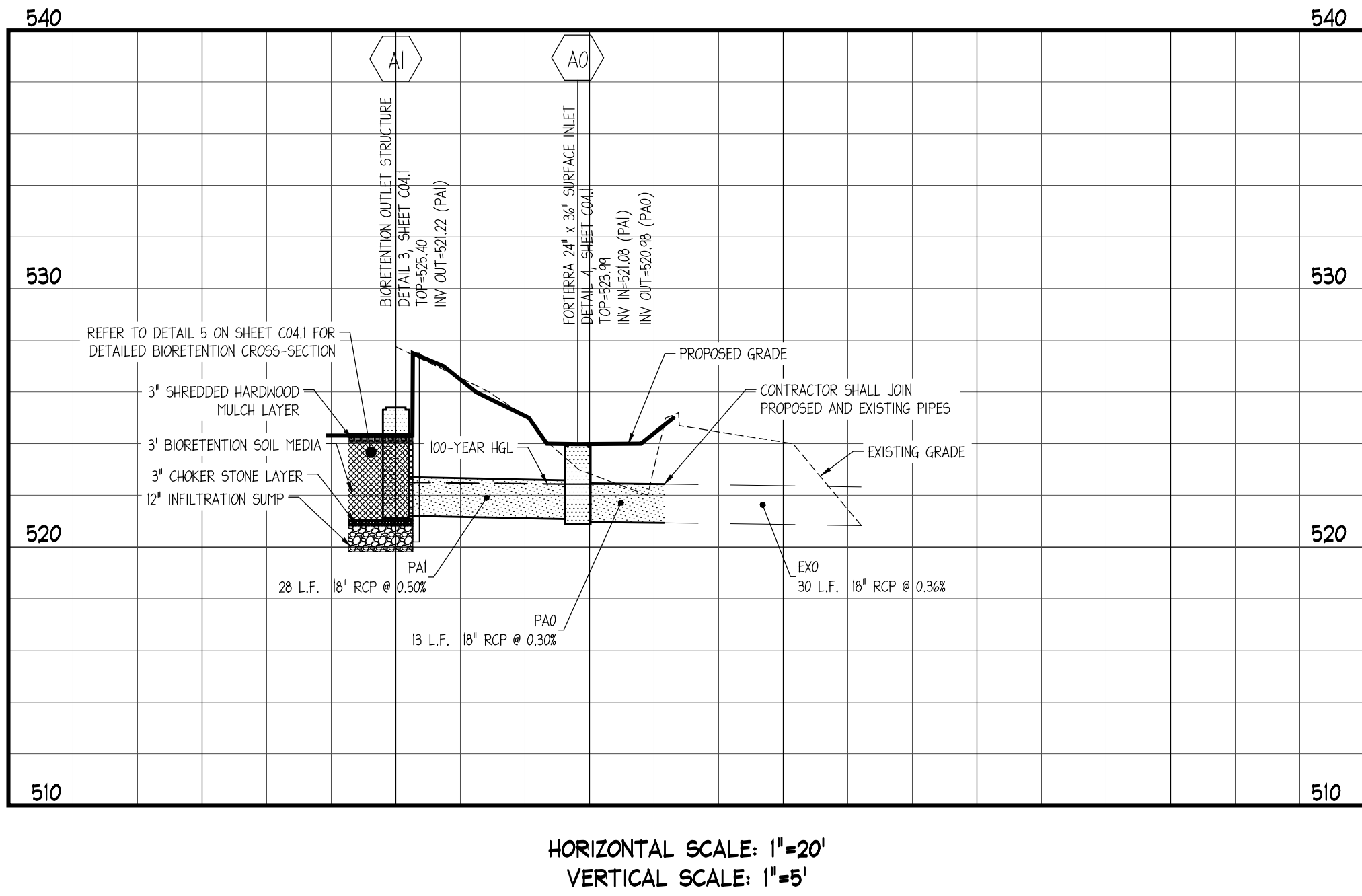
## STORM PROFILE A4.1-A4



| STORM STRUCTURE TABLE |   |               |                                |                |
|-----------------------|---|---------------|--------------------------------|----------------|
| STRUCTURE NAME        | STRUCTURE TYPE  | RIM ELEVATION | INVERT IN                      | INVERT OUT     |
| A0                    | FORTERRA 24" x 36" SURFACE INLET<br>DETAIL 4, SHEET C04.1 | 523.99        | 521.08 (PA1)                   | 520.98 (PA0)   |
| A1                    | BIORETENTION OUTLET STRUCTURE<br>DETAIL 1, SHEET C04.1    | 525.40        |                                | 521.22 (PA1)   |
| A2                    | JUNCTION BOX<br>DETAIL 2, SHEET C04.3                     | 530.05        | 525.50 (PA3)                   | 525.50 (PA2)   |
| A3                    | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.80        | 525.70 (PA4)                   | 525.71 (PA3)   |
| A4                    | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.75        | 526.15 (PA5)<br>526.15 (PA4.1) | 526.15 (PA4)   |
| A4.1                  | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.80        |                                | 526.39 (PA4.1) |
| A5                    | NO.42 CATCH BASIN<br>DETAIL 2, SHEET C04.4                | 529.75        |                                | 526.29 (PA5)   |
| B1                    | NO.42 CATCH BASIN<br>DETAIL 2, SHEET C04.4                | 529.80        | 525.07 (PB2)                   | 525.07 (PB1)   |
| B2                    | JUNCTION BOX<br>DETAIL 2, SHEET C04.3                     | 529.20        | 525.32 (PB3)                   | 525.32 (PB2)   |
| B3                    | LOW PROFILE NO.12 CATCH BASIN<br>DETAIL 1, SHEET C04.4    | 529.00        |                                | 525.57 (PB3)   |

| STORM PIPE TABLE |      |        |       |          |
|------------------|------|--------|-------|----------|
| NAME             | SIZE | LENGTH | SLOPE | MATERIAL |
| EX0              | 18"  | 30'    | 0.36% | RCP      |
| PA0              | 18"  | 13'    | 0.30% | RCP      |
| PA1              | 18"  | 28'    | 0.50% | RCP      |
| PA2              | 15"  | 35'    | 0.50% | RCP      |
| PA3              | 15"  | 42'    | 0.50% | RCP      |
| PA4.1            | 15"  | 66'    | 0.35% | RCP      |
| PA5              | 15"  | 54'    | 0.25% | RCP      |
| PB1              | 15"  | 35'    | 0.50% | RCP      |
| PB2              | 15"  | 50'    | 0.50% | RCP      |
| PB3              | 15"  | 100'   | 0.25% | RCP      |

## STORM PROFILE A1-OUTLET



| 100-YEAR STORM CALCULATIONS   |         |           |       |       |          |       |       |       |         |       |       |        |      |       |                    |        |          |        |                      |        |         |       |
|---|---------|-----------|-------|-------|----------|-------|-------|-------|---------|-------|-------|--------|------|-------|--------------------|--------|----------|--------|----------------------|--------|---------|-------|
| Station   | Len     | Drng Area |       | Rnoff | Area x C |       | Tc    |       | Rain    | Total | Cap   | Vel    | Pipe |       | Invert Elev        |        | HGL Elev |        | Grnd / Rim Elev      |        | Line ID |       |
| Line  | To Line | Incr      | Total | coeff | Incr     | Total | Inlet | Syst  | (l)     | flow  | full  | (ft/s) | Size | Slope | Dn                 | Up     | Dn       | Up     | Dn                   | Up     |         |       |
|   |         | (ft)      | (ac)  | (C)   |          |       | (min) | (min) | (in/hr) | (cfs) | (cfs) |        | (in) | (%)   | (ft)               | (ft)   | (ft)     | (ft)   | (ft)                 | (ft)   |         |       |
| 9   | End     | 13.412    | 0.04  | 0.04  | 0.40     | 0.02  | 0.02  | 5.0   | 5.0     | 9.8   | 0.16  | 6.21   | 0.09 | 18    | 0.30               | 520.94 | 520.98   | 522.44 | 522.44               | 0.00   | 523.99  | PA0   |
| 8   | 7       | 99.757    | 0.07  | 0.07  | 0.93     | 0.07  | 0.07  | 5.0   | 5.0     | 9.8   | 0.64  | 3.50   | 2.17 | 15    | 0.25               | 525.32 | 525.57   | 525.68 | 525.93               | 529.20 | 529.00  | PB3   |
| 7   | 6       | 49.986    | 0.01  | 0.08  | 0.01     | 0.00  | 0.07  | 5.0   | 5.8     | 9.6   | 0.63  | 4.95   | 2.14 | 15    | 0.50               | 525.07 | 525.32   | 525.52 | 525.63               | 529.80 | 529.20  | PB2   |
| 6   | End     | 34.773    | 0.08  | 0.16  | 0.86     | 0.07  | 0.13  | 5.0   | 6.2     | 9.4   | 1.28  | 4.89   | 2.23 | 15    | 0.49               | 524.90 | 525.07   | 525.90 | 525.52               | 0.00   | 529.80  | PB1   |
| 5   | 3       | 66.124    | 0.23  | 0.23  | 0.68     | 0.16  | 0.16  | 5.0   | 5.0     | 9.8   | 1.54  | 4.21   | 1.37 | 15    | 0.36               | 526.15 | 526.39   | 527.36 | 527.39               | 529.75 | 529.80  | PA4.1 |
| 4   | 3       | 54.110    | 0.10  | 0.10  | 0.93     | 0.09  | 0.09  | 5.0   | 5.0     | 9.8   | 0.91  | 3.56   | 0.78 | 15    | 0.26               | 526.15 | 526.29   | 527.36 | 527.37               | 529.75 | 529.75  | PA5   |
| 3   | 2       | 89.873    | 0.13  | 0.46  | 0.60     | 0.08  | 0.33  | 5.0   | 6.2     | 9.4   | 3.09  | 4.89   | 3.12 | 15    | 0.49               | 525.71 | 526.15   | 526.85 | 526.98               | 529.80 | 529.75  | PA4   |
| 2   | 1       | 42.016    | 0.14  | 0.60  | 0.65     | 0.09  | 0.42  | 5.0   | 6.6     | 9.3   | 3.89  | 4.95   | 3.42 | 15    | 0.50               | 525.50 | 525.71   | 526.66 | 526.75               | 530.05 | 529.80  | PA3   |
| 1   | End     | 35.083    | 0.01  | 0.61  | 0.01     | 0.00  | 0.42  | 5.0   | 6.8     | 9.2   | 3.87  | 5.01   | 3.90 | 15    | 0.51               | 525.32 | 525.50   | 526.32 | 526.39               | 0.00   | 530.05  | PA2   |
| Project File: 180050.stm  |         |           |       |       |          |       |       |       |         |       |       |        |      |       | Number of lines: 9 |        |          |        | Run Date: 11/14/2018 |        |         |       |
| NOTES: Intensity = 127.16 / (Inlet time + 17.80) ^ 0.62; Return period = Yrs. 100 ; c = cir e = ellip b = box |         |           |       |       |          |       |       |       |         |       |       |        |      |       |                    |        |          |        |                      |        |         |       |
| Storm Sewers v12.00   |         |           |       |       |          |       |       |       |         |       |       |        |      |       |                    |        |          |        |                      |        |         |       |

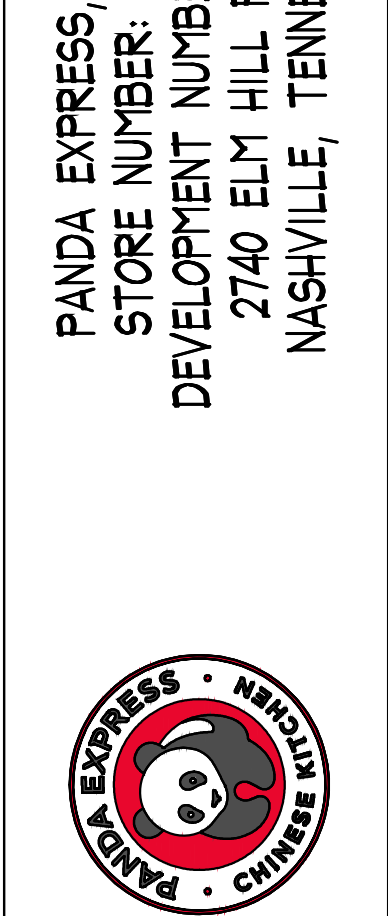


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CLIENT:

PANDA EXPRESS, INC.  
STORE NUMBER: ####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:

PANDA EXPRESS, INC.  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

| REVISION HISTORY |     |
|------------------|-----|
| 1                | ADD |
| 2                | ADD |
| 3                | ADD |
| 4                | ADD |
| 5                | ADD |
| 6                | ADD |
| 7                | ADD |
| 8                | ADD |
| 9                | ADD |
| 10               | ADD |

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PROFILES II

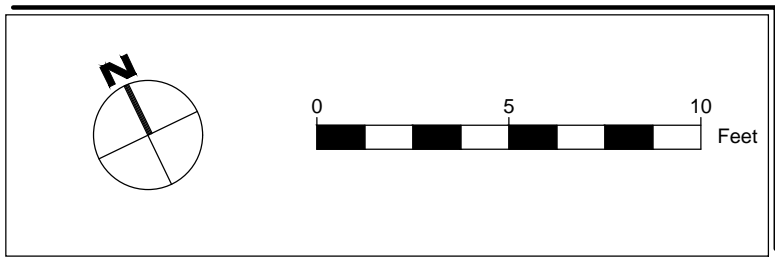
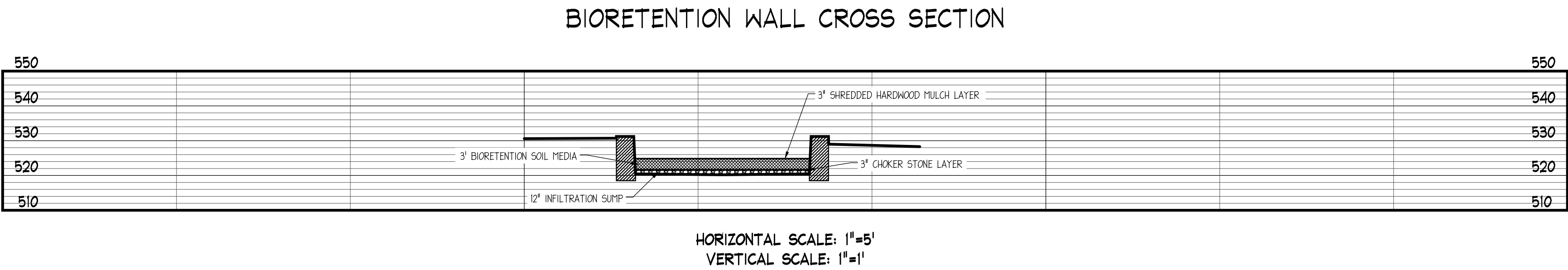
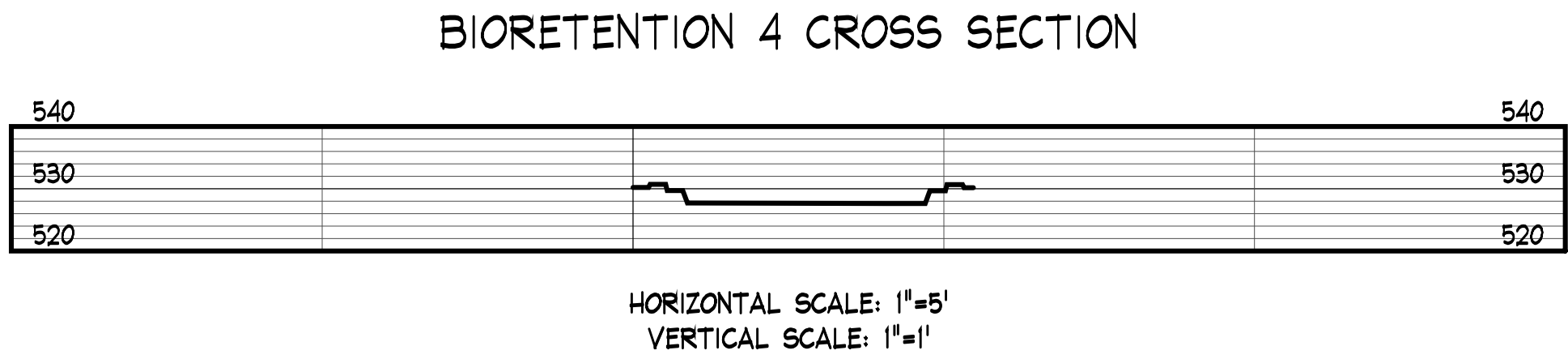
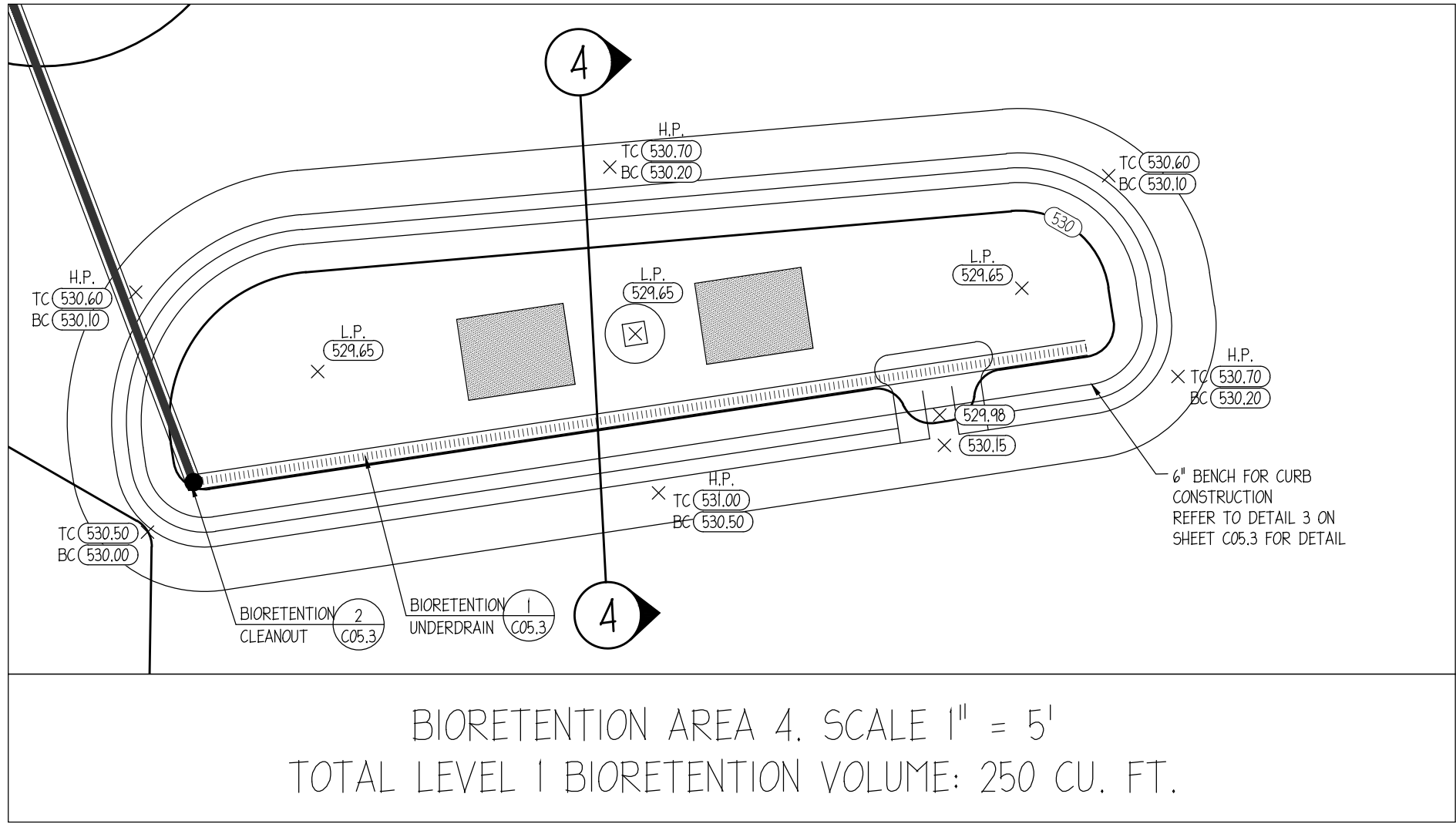
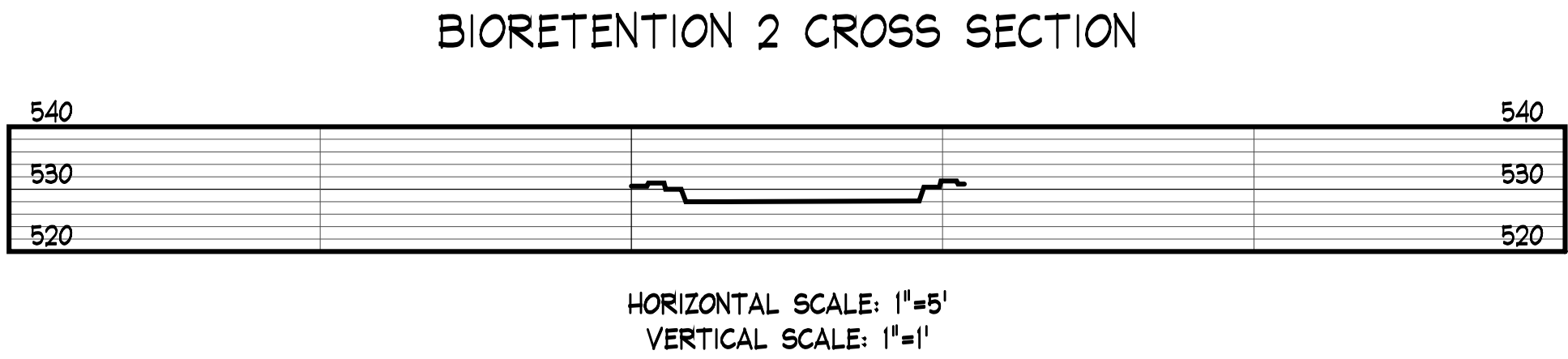
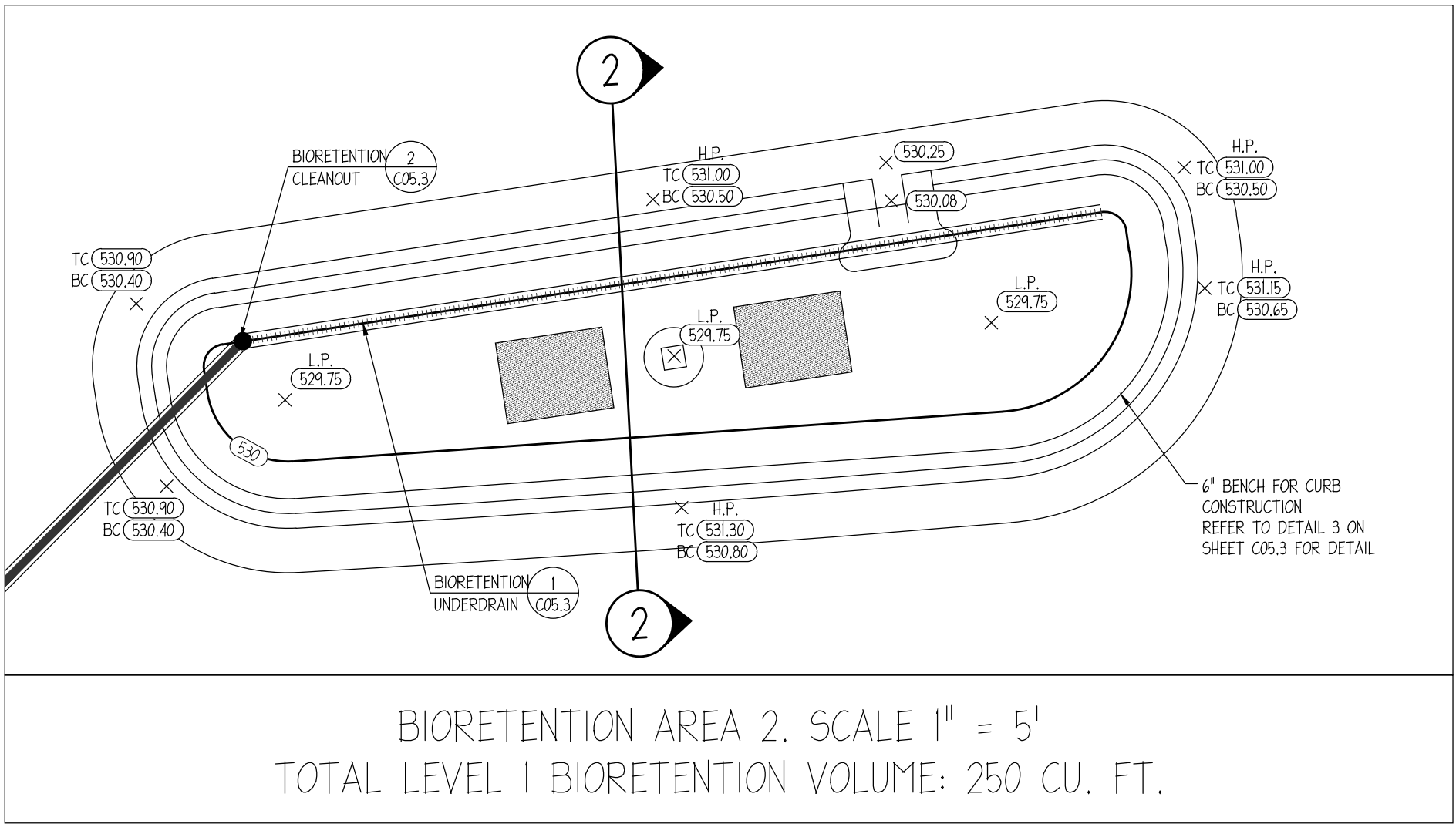
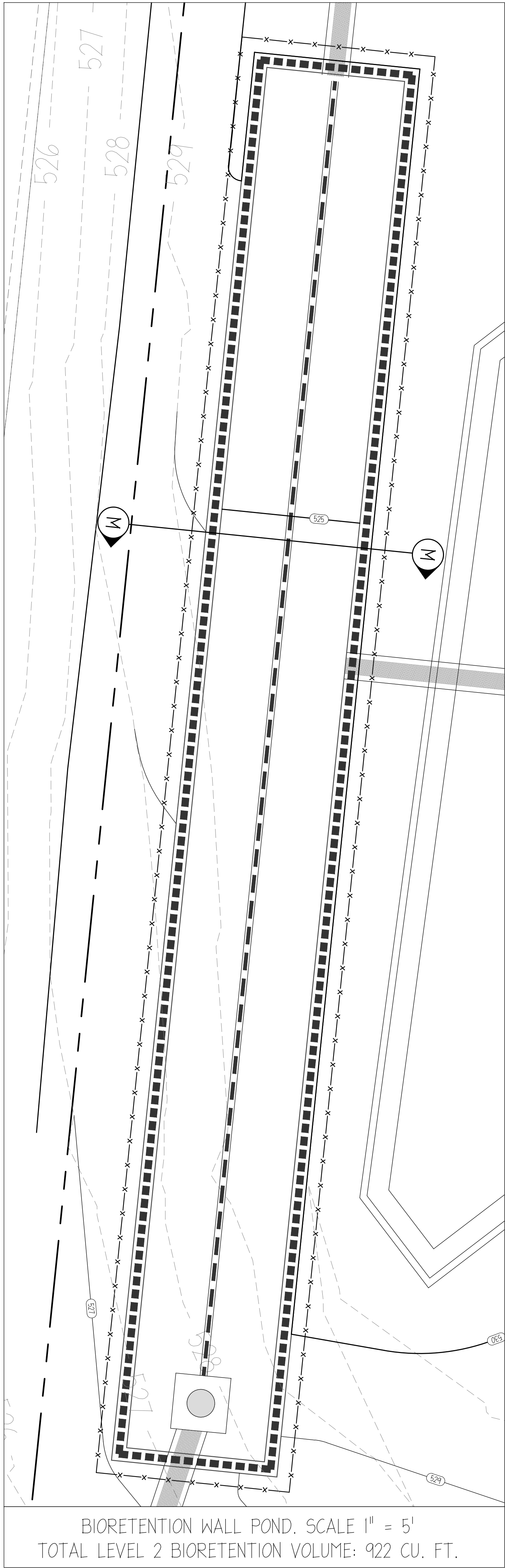
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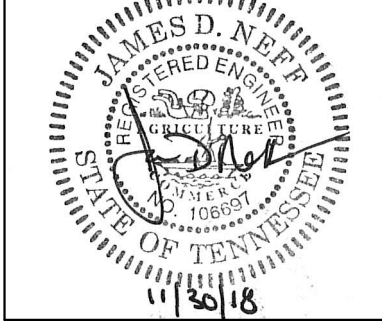








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DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:  
**PANDA EXPRESS, INC.**  
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| 1                | ISSUE |
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| 3                | ISSUE |
| 4                | ISSUE |
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| 8                | ISSUE |
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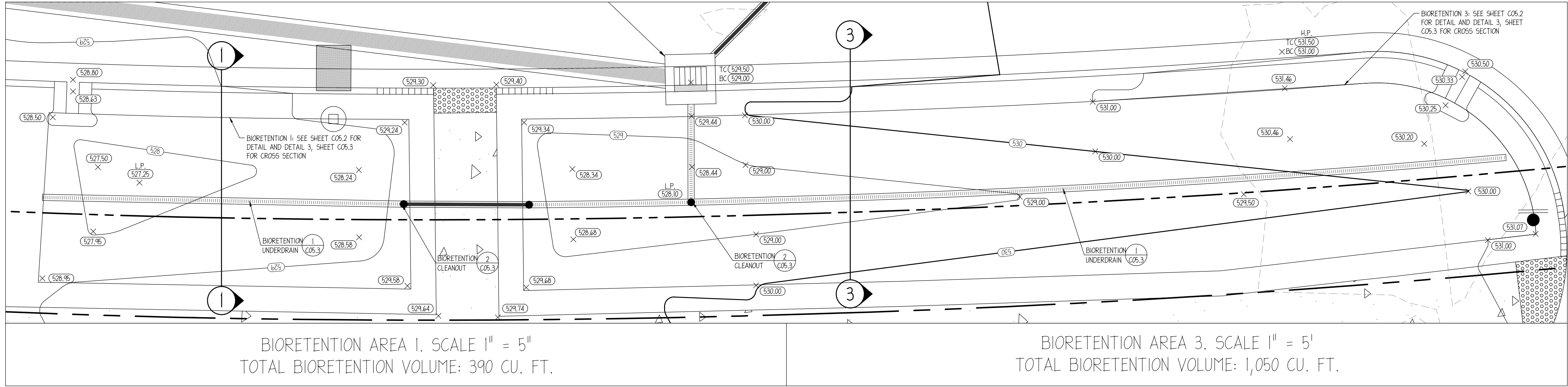
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BIORETENTION PLAN I

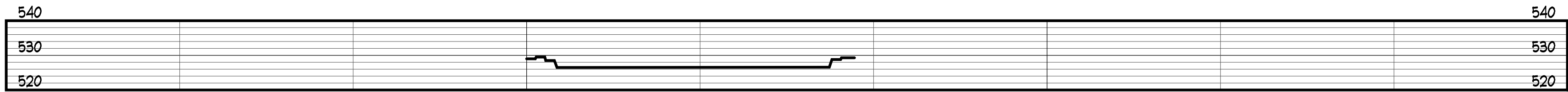
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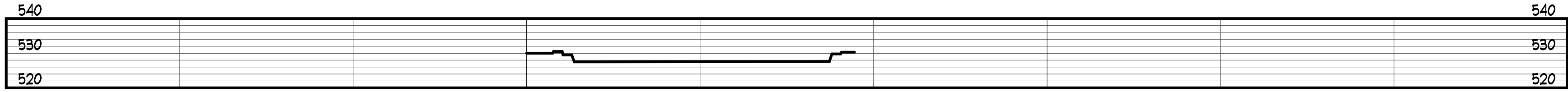


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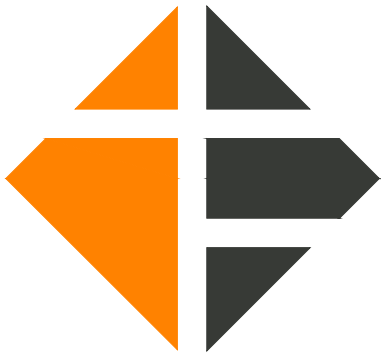
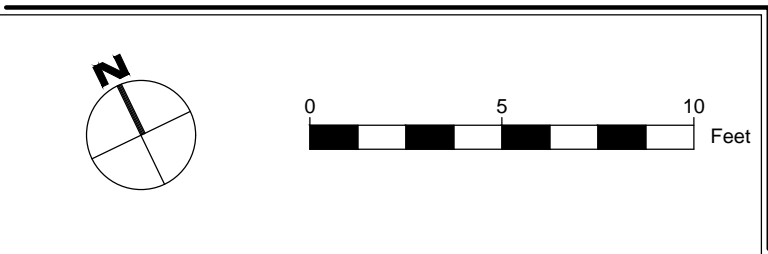


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VERTICAL SCALE: 1"=1'

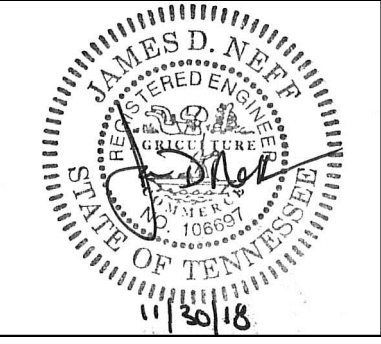
BIORETENTION 3 CROSS SECTION



HORIZONTAL SCALE: 1"=5'  
VERTICAL SCALE: 1"=1'



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PLANS FOR:

CLIENT:

PANDA EXPRESS, INC.  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

PROJECT:

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BIORETENTION PLAN II

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Activity: Bioretention

General Application  
GIP-01

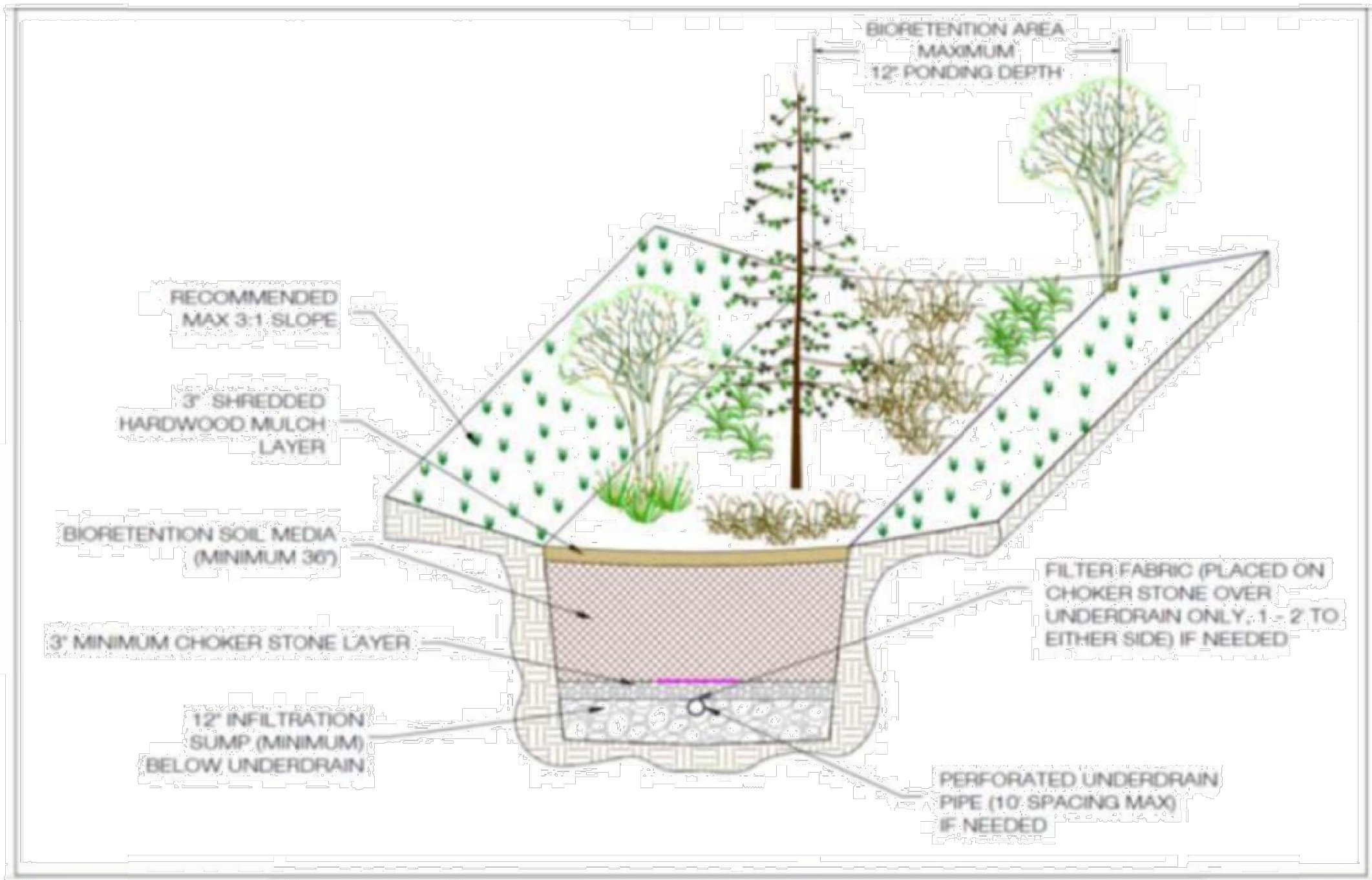


Figure 1.6. Typical Bioretention Basin Level 2: Infiltration Sump (source: VADCR, 2013)

1 LEVEL 2 BIORETENTION CROSS SECTION (WITH PERFORATED UNDERDRAIN) NTS

Activity: Bioretention

General Application  
GIP-01

APPENDIX 1-B  
ADDITIONAL DETAILS AND SCHEMATICS  
FOR REGULAR BIORETENTION PRACTICES

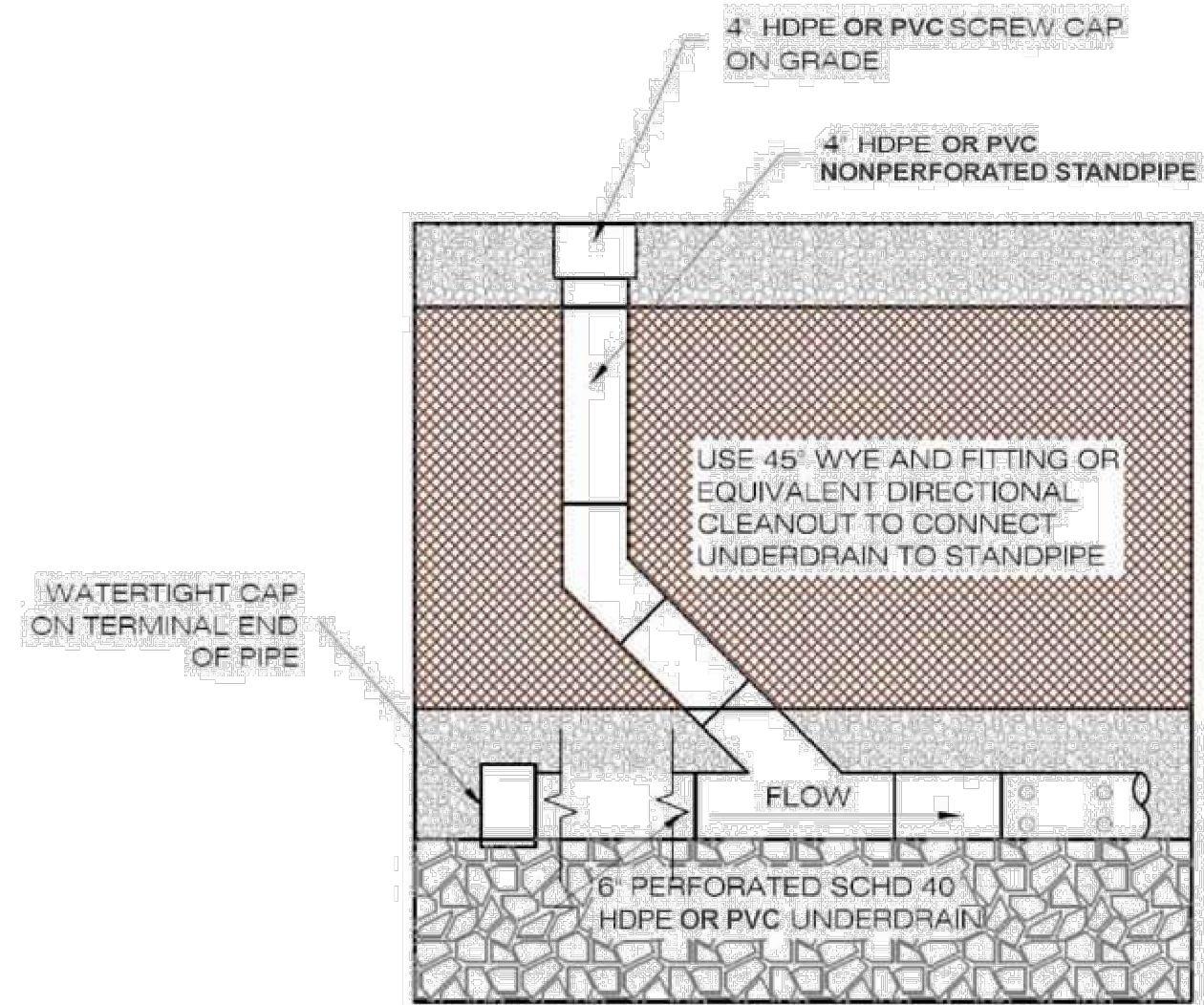


Figure 1-B. 1. 4" Cleanout Detail (source: VADCR, 2010)

2 4" CLEANOUT DETAIL (FOR PERFORATED UNDERDRAINS) NTS

Activity: Urban Bioretention

General Application  
GIP-02

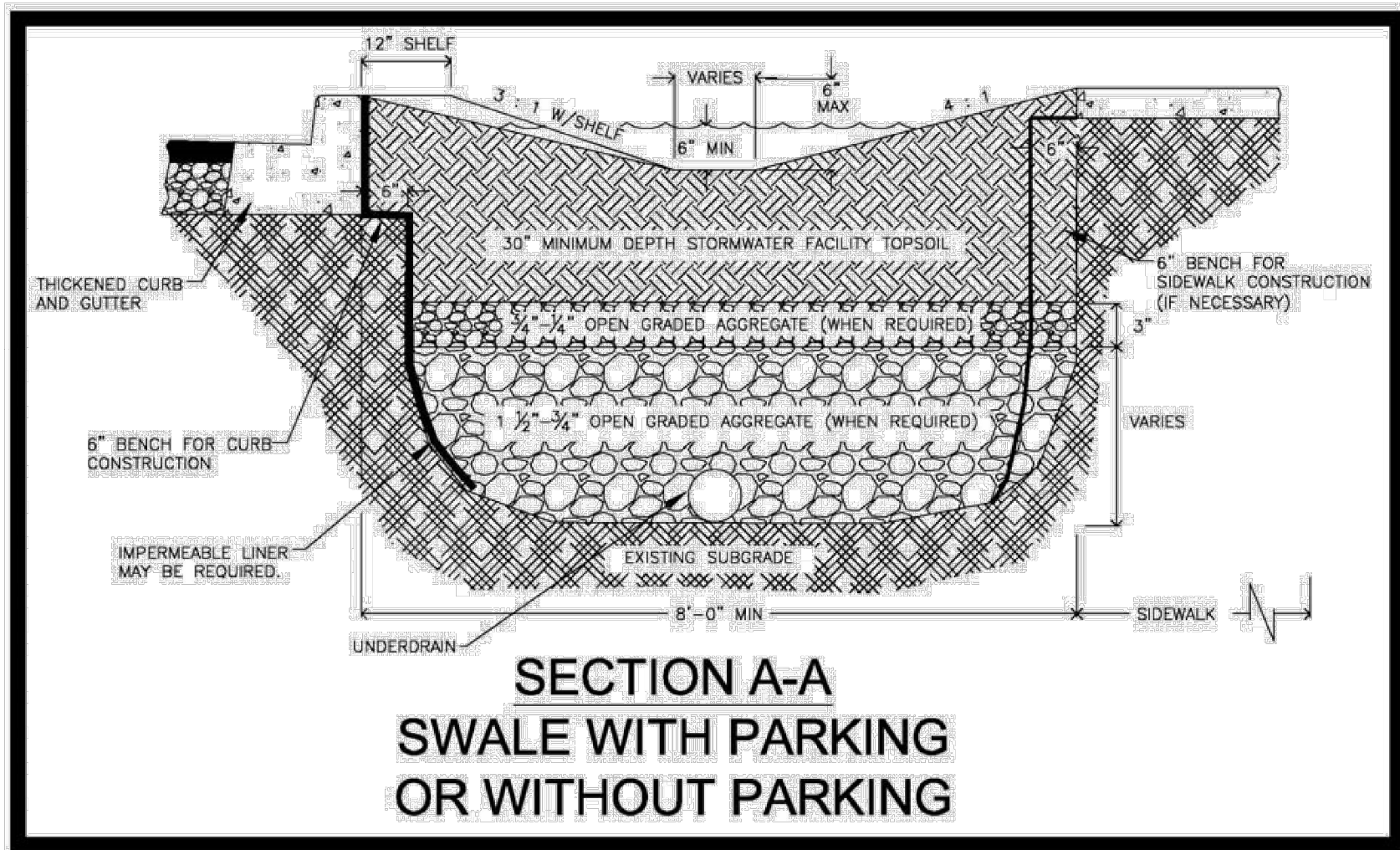
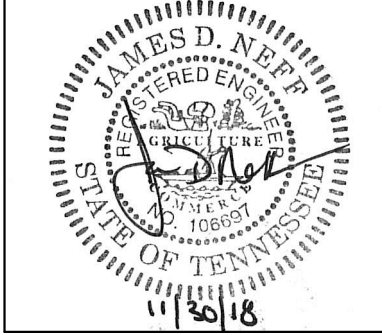


Figure 2.6. Green Streets Swale Section View (source: Portland, 2011)

3 SWALE WITH OR WITHOUT PARKING (WITH PERFORATED UNDERDRAIN) NTS



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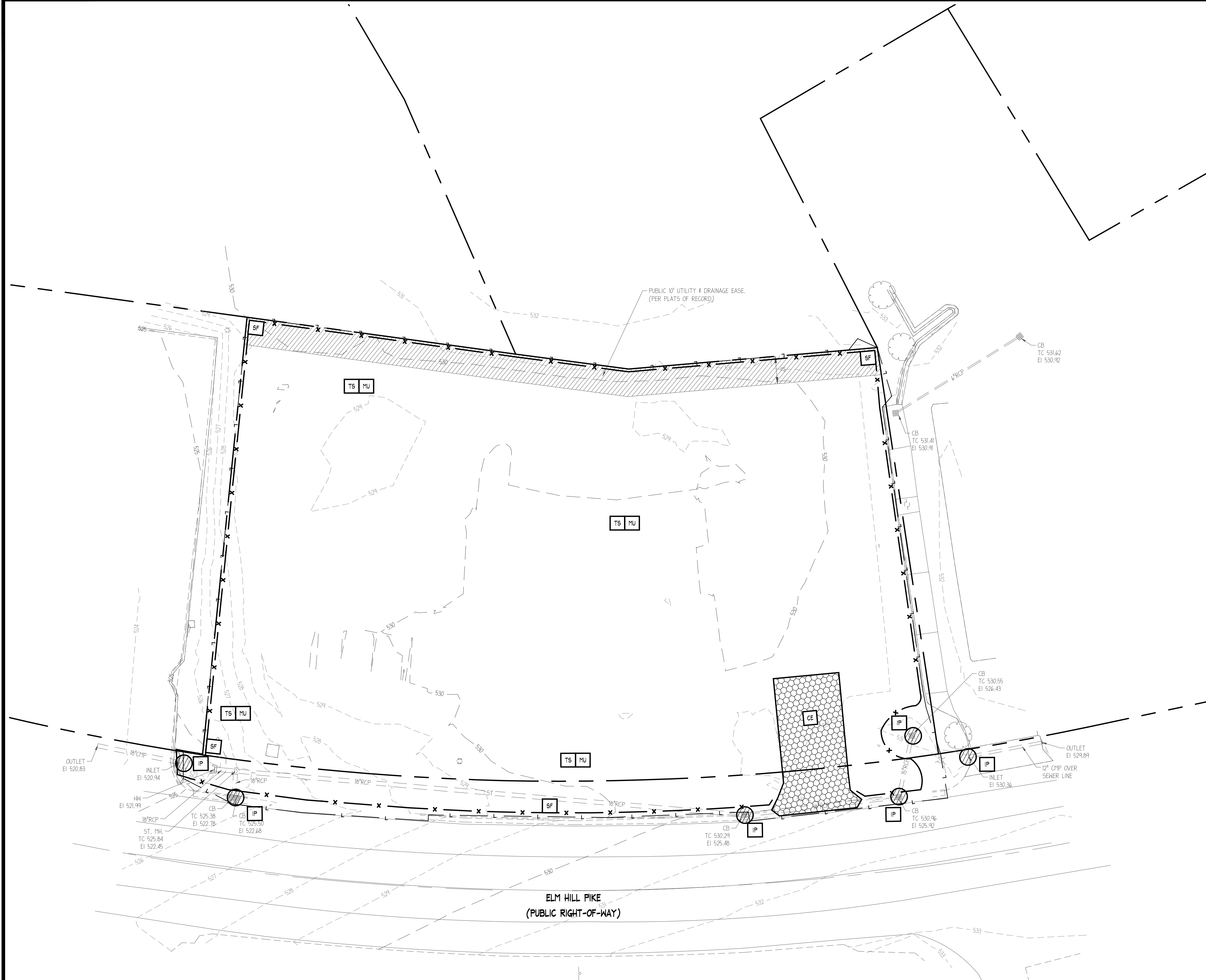
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BIORETENTION DETAILS

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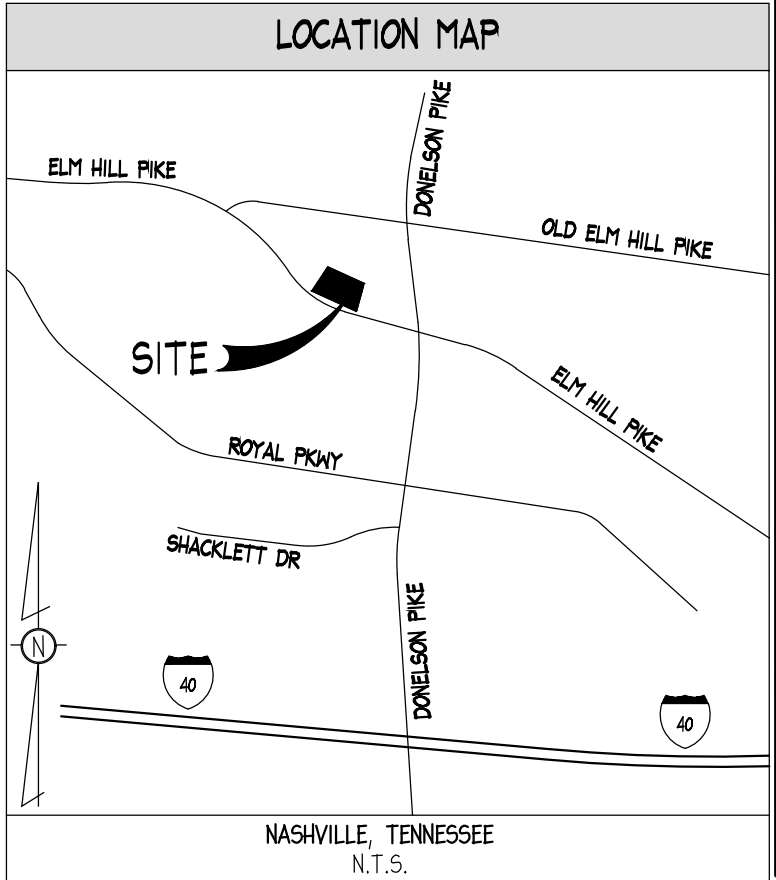


EROSION CONTROL LEGEND

| ESPC BMP                            | LINETYPE/SYMBOL | REFERENCE                 |
|-------------------------------------|-----------------|---------------------------|
| CE CONSTRUCTION EXIT                |                 | SHEET C06.3               |
| SF SILT FENCE                       |                 | SHEET C06.3               |
| IP STORM DRAIN INLET PROTECTION     |                 | SHEET C06.4               |
| OP STORM DRAIN OUTLET PROTECTION    |                 | SHEET C06.6               |
| TS D.A.S. WITH PERMANENT VEGETATION |                 | REFER TO LANDSCAPE SHEETS |
| SO D.A.S. WITH SOD                  |                 | SHEET C06.5               |
| TS D.A.S. WITH TEMPORARY VEGETATION |                 | NOT APPLICABLE            |
| MU D.A.S. WITH MULCH                |                 | SHEET C06.5               |
| CH CONCRETE WASHOUT                 |                 | SHEET C06.4               |
| TM TUBES AND WATTLES                |                 | SHEET C06.5               |
| RECP ROLLED EROSION CONTROL PRODUCT |                 | SHEET C06.3               |
| TD DIVERSION                        |                 | NOT APPLICABLE            |
| TREE PROTECTION FENCE               |                 | NOT APPLICABLE            |

D.A.S. = DISTURBED AREA STABILIZATION

SEE LANDSCAPE/TREE PROTECTION PLANS FOR LEGEND SPECIFIC TO THOSE SHEETS



ESPC NOTES

- GENERAL**
- EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION CONTROL MEASURES AND PRACTICES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE AT THE EXPENSE OF THE CONTRACTOR.
  - THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.
  - ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
  - ANY AMENDMENT TO THE EROSION CONTROL PLANS WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.
  - THE PERMITTEE IS ONLY RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF STORMWATER MANAGEMENT DEVICES PRIOR TO STABILIZATION OF THE SITE AND NOT THE OPERATION AND MAINTENANCE OF SUCH STRUCTURES AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
  - EROSION CONTROL AND TREE PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO ANY OTHER CONSTRUCTION ACTIVITY AND MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.
  - SEE GRADING 4 DRAINAGE NOTES.

- SLOPES AND DISTURBED AREA STABILIZATION**
- CONCENTRATED FLOW AREAS AND ALL SLOPES 2H:1V OR STEEPER SHALL BE STABILIZED WITH THE APPROPRIATE EROSION CONTROL MATTING OR BLANKET.
  - ALL CUT AND FILL SLOPES MUST BE SURFACE ROUGHENED AND VEGETATED WITHIN (7) DAYS OF THEIR CONSTRUCTION.
  - ALL DISTURBED AREAS SHALL BE GRASSED AS SOON AS CONSTRUCTION PHASES PERMIT. NO EXPOSED GRADE WILL BE LEFT UNSTABLE FOR MORE THAN 7 DAYS.
  - PERMANENT GRASSING AND LANDSCAPING OF DISTURBED AREAS SHALL BE COMPLETED AS QUICKLY AS POSSIBLE. TEMPORARY STABILIZATION BY MULCHING AND/OR TEMPORARY SEEDING WILL BE REQUIRED IN THE EVENT OF PROJECT DELAYS.
  - WIRE MESH REINFORCED SEDIMENT BARRIERS SHALL BE PLACED AT THE TOE OF ALL FILL SLOPES.

- DRAINAGE**
- ALL DRAINAGE STRUCTURES SHALL BE EROSION PROOFED.
  - LENGTH OF RIP-RAP PADS AT PIPE OUTLETS SHALL BE A MINIMUM LENGTH OF (6) SIX TIMES THE DIAMETER OF THE PIPE IN FEET.

- TREE PROTECTION**
- ALL BUFFERS AND TREE SAVE AREAS SHALL BE CLEARLY IDENTIFIED WITH FLAGGING AND/OR FENCING PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE.
  - ALL TREE PROTECTION DEVICES SHALL BE INSTALLED PRIOR TO START OF LAND DISTURBANCE AND MAINTAINED UNTIL FINAL LANDSCAPING IS INSTALLED.
  - NO PARKING, STORAGE, OR OTHER CONSTRUCTION SITE ACTIVITIES ARE TO OCCUR WITHIN TREE PROTECTION AREAS.

- MAINTENANCE AND INSPECTIONS**
- SEDIMENT AND EROSION CONTROL MEASURES AND PRACTICES SHALL BE INSPECTED DAILY.
  - SEDIMENT STORAGE MAINTENANCE INDICATORS MUST BE INSTALLED IN SEDIMENT STORAGE STRUCTURES, INDICATING THE 1/3 FULL VOLUME.
  - SEDIMENT CONTROL DEVICES MUST BE INSPECTED DAILY AND CHECKED AFTER EACH STORM EVENT AND CLEANED OR REPLACED WHEN THEY REACH 1/3 OF DESIGN CAPACITY.
  - ALL TREE PROTECTION FENCING TO BE INSPECTED DAILY AND REPLACED OR REPAIRED AS NEEDED.
  - MAINTENANCE OF ALL SOIL AND SEDIMENTATION CONTROL MEASURES AND PRACTICES, WHETHER TEMPORARY OR PERMANENT, SHALL BE AT ALL TIMES THE RESPONSIBILITY OF THE CONTRACTOR.

EROSION CONTROL ACTIVITY SCHEDULE

| ACTIVITY                                 | MONTH 1 | MONTH 2 | MONTH 3 | MONTH 4 |
|--|---------|---------|---------|---------|
| START CONSTRUCTION                       | X       |         |         |         |
| INSTALLATION OF EROSION CONTROL DEVICES  |         |         |         |         |
| CLEARING AND GRUBBING                    |         |         |         |         |
| GRADING                                  |         |         |         |         |
| TEMPORARY VEGETATION AT 14 DAY INTERVALS |         |         |         |         |
| STORM SEWER SYSTEM INSTALLATION          |         |         |         |         |
| PAVING                                   |         |         |         |         |
| BUILDING PAD CONSTRUCTION                |         |         |         |         |
| INSTALLATION OF UTILITIES                |         |         |         |         |
| PERMANENT VEGETATION AT 30 DAY INTERVALS |         |         |         |         |
| MAINTENANCE OF EROSION CONTROL DEVICES   |         |         |         |         |
| REMOVE EROSION CONTROL DEVICES           |         |         |         |         |
| TREE PROTECTION FENCING                  |         |         |         |         |
| END OF CONSTRUCTION                      |         |         |         |         |

SCHEDULE IS REPRESENTATIVE FOR OVERALL SITE CONSTRUCTION. THE ENGINEER MUST BE NOTIFIED, IF THIS SCHEDULE IS DEVIATED FROM BY THE CONTRACTOR.

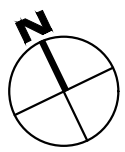
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ANTICIPATED COMPLETION DATE: TBD

24-HOUR CONTACT:  
CLAY WORTHY  
602-931-6540

CONTRACTOR SHALL PROTECT ALL ITEMS  
OUTSIDE LIMITS OF CONSTRUCTION UNLESS  
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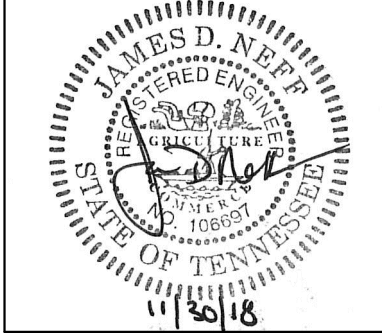
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0 20 40 Feet



14499 N DALE HARRY HWY  
SUITE 250  
TAMPA, FL 33618  
813.367.0084  
INGENIUMTAMPA.COM



PANDA EXPRESS, INC.  
STORE NUMBER: #####  
DEVELOPMENT NUMBER: 6559  
2740 ELM HILL PIKE  
NASHVILLE, TENNESSEE



CLIENT:

PANDA EXPRESS, INC.  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-9898

REVISION HISTORY

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PROJ # 180050  
DWG NAME 180050 C06.DWG  
ISSUE DATE 11/30/2018  
PROJ TGR LLC

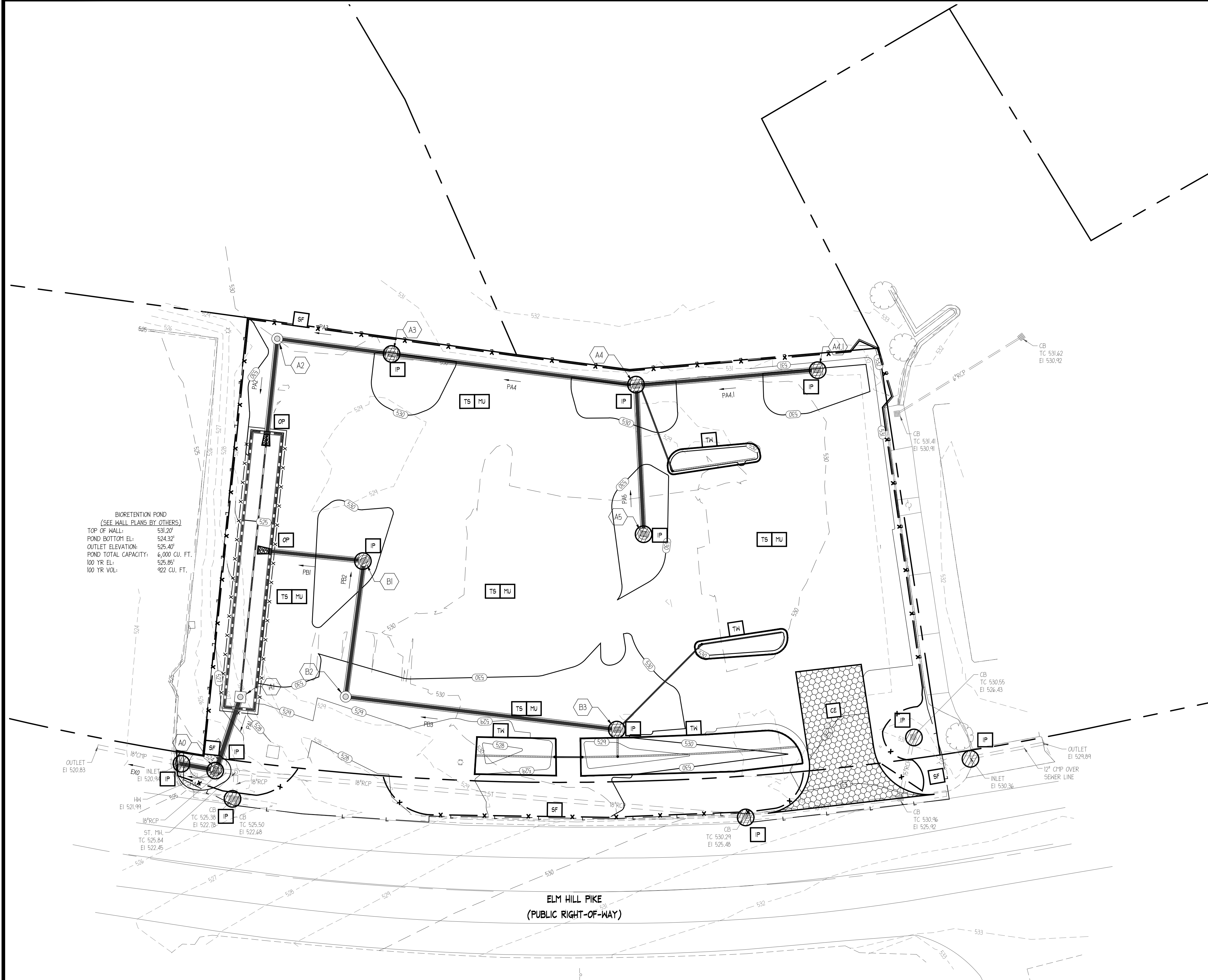
ESPC PLAN -  
CLEARING PHASE

C06.0

SHEET NUMBER

ISSUE FOR PERMIT





EROSION CONTROL LEGEND

| ESPC BMP                            | LINETYPE/SYMBOL | REFERENCE                 |
|-------------------------------------|-----------------|---------------------------|
| CE CONSTRUCTION EXIT                |                 | SHEET C06.3               |
| SF SILT FENCE                       |                 | SHEET C06.3               |
| IP STORM DRAIN INLET PROTECTION     |                 | SHEET C06.4               |
| OP STORM DRAIN OUTLET PROTECTION    |                 | SHEET C06.6               |
| TS D.A.S. WITH PERMANENT VEGETATION |                 | REFER TO LANDSCAPE SHEETS |
| SO D.A.S. WITH SOO                  |                 | SHEET C06.5               |
| TS D.A.S. WITH TEMPORARY VEGETATION |                 | NOT APPLICABLE            |
| MU D.A.S. WITH MULCH                |                 | SHEET C06.5               |
| GN CONCRETE WASHOUT                 |                 | SHEET C06.4               |
| TK TUBES AND WATTLES                |                 | SHEET C06.5               |
| RECP ROLLED EROSION CONTROL PRODUCT |                 | SHEET C06.3               |
| TD DIVERSION                        |                 | NOT APPLICABLE            |
| TREE PROTECTION FENCE               |                 | NOT APPLICABLE            |

D.A.S. = DISTURBED AREA STABILIZATION

SEE LANDSCAPE/TREE PROTECTION PLANS FOR LEGEND SPECIFIC TO THOSE SHEETS

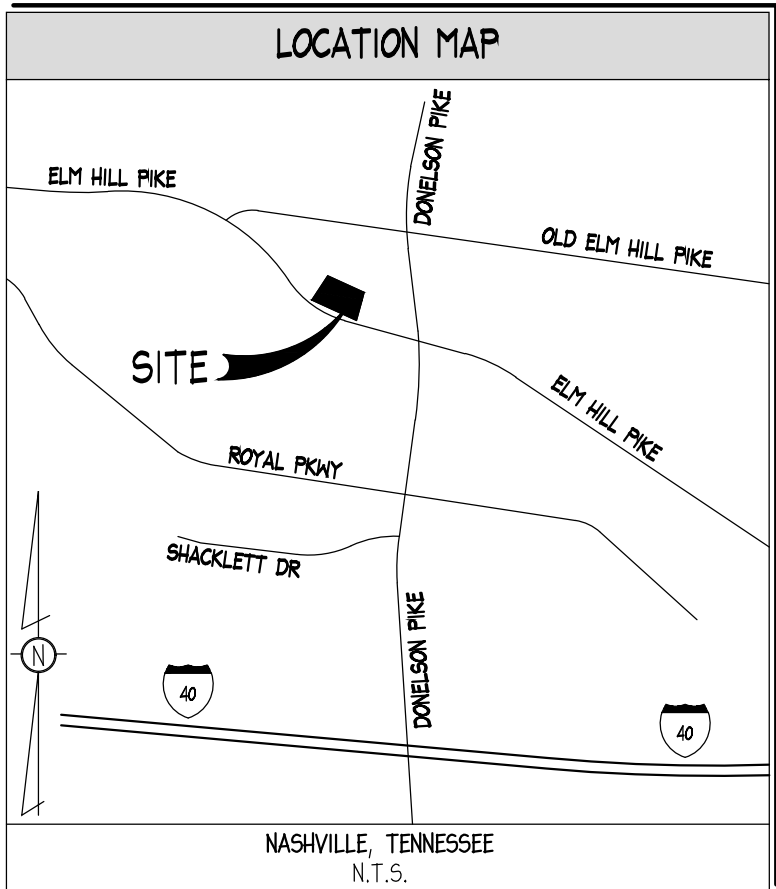
EROSION CONTROL ACTIVITY SCHEDULE

| ACTIVITY                                 | MONTH 1 | MONTH 2 | MONTH 3 | MONTH 4 |
|--|---------|---------|---------|---------|
| START CONSTRUCTION                       | *       |         |         |         |
| INSTALLATION OF EROSION CONTROL DEVICES  | *       |         |         |         |
| CLEARING AND GRUBBING                    |         | *       |         |         |
| GRADING                                  |         | *       |         |         |
| TEMPORARY VEGETATION AT 14 DAY INTERVALS |         | *       |         |         |
| STORM SEWER SYSTEM INSTALLATION          |         | *       |         |         |
| PAVING                                   |         |         | *       |         |
| BUILDING PAD CONSTRUCTION                |         |         | *       |         |
| INSTALLATION OF UTILITIES                |         |         | *       |         |
| PERMANENT VEGETATION AT 30 DAY INTERVALS |         |         | *       |         |
| MAINTENANCE OF EROSION CONTROL DEVICES   |         |         | *       |         |
| REMOVE EROSION CONTROL DEVICES           |         |         | *       |         |
| TREE PROTECTION FENCING                  |         |         | *       |         |
| END OF CONSTRUCTION                      |         |         | *       |         |

SCHEDULE IS REPRESENTATIVE FOR OVERALL SITE CONSTRUCTION. THE ENGINEER MUST BE NOTIFIED, IF THIS SCHEDULE IS DEVIATED FROM BY THE CONTRACTOR.

ANTICIPATED START DATE: TBD

ANTICIPATED COMPLETION DATE: TBD



ESPC NOTES

GENERAL

- EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION CONTROL MEASURES AND PRACTICES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE AT THE EXPENSE OF THE CONTRACTOR.
- THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.
- ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
- ANY AMENDMENT TO THE EROSION CONTROL PLANS WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.
- THE PERMITTEE IS ONLY RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF STORMWATER MANAGEMENT DEVICES PRIOR TO STABILIZATION OF THE SITE AND NOT THE OPERATION AND MAINTENANCE OF SUCH STRUCTURES AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- EROSION CONTROL AND TREE PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO ANY OTHER CONSTRUCTION ACTIVITY AND MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.
- SEE GRADING 4 DRAINAGE NOTES.

SLOPES AND DISTURBED AREA STABILIZATION

- CONCENTRATED FLOW AREAS AND ALL SLOPES 2H:1V OR STEEPER SHALL BE STABILIZED WITH THE APPROPRIATE EROSION CONTROL MATTING OR BLANKET.
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- PERMANENT GRASSING AND LANDSCAPING OF DISTURBED AREAS SHALL BE COMPLETED AS QUICKLY AS POSSIBLE. TEMPORARY STABILIZATION BY MULCHING AND/OR TEMPORARY SEEDING WILL BE REQUIRED IN THE EVENT OF PROJECT DELAYS.
- WIRE MESH REINFORCED SEDIMENT BARRIERS SHALL BE PLACED AT THE TOE OF ALL FILL SLOPES.

DRAINAGE

- ALL DRAINAGE STRUCTURES SHALL BE EROSION PROOFED.
- LENGTH OF RIP-RAP PADS AT PIPE OUTLETS SHALL BE A MINIMUM LENGTH OF (6) SIX TIMES THE DIAMETER OF THE PIPE IN FEET.

TREE PROTECTION

- ALL BUFFERS AND TREE SAVE AREAS SHALL BE CLEARLY IDENTIFIED WITH FLAGGING AND/OR FENCING PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE.
- ALL TREE PROTECTION DEVICES SHALL BE INSTALLED PRIOR TO START OF LAND DISTURBANCE AND MAINTAINED UNTIL FINAL LANDSCAPING IS INSTALLED.
- NO PARKING, STORAGE, OR OTHER CONSTRUCTION SITE ACTIVITIES ARE TO OCCUR WITHIN TREE PROTECTION AREAS.

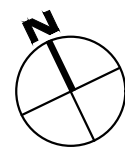
MAINTENANCE AND INSPECTIONS

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CLAY WORTHY  
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0 20 40 Feet



1449 N DALE HESBY HWY  
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REVISION HISTORY

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PROJ # 180050  
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PROJ TGR, LLC

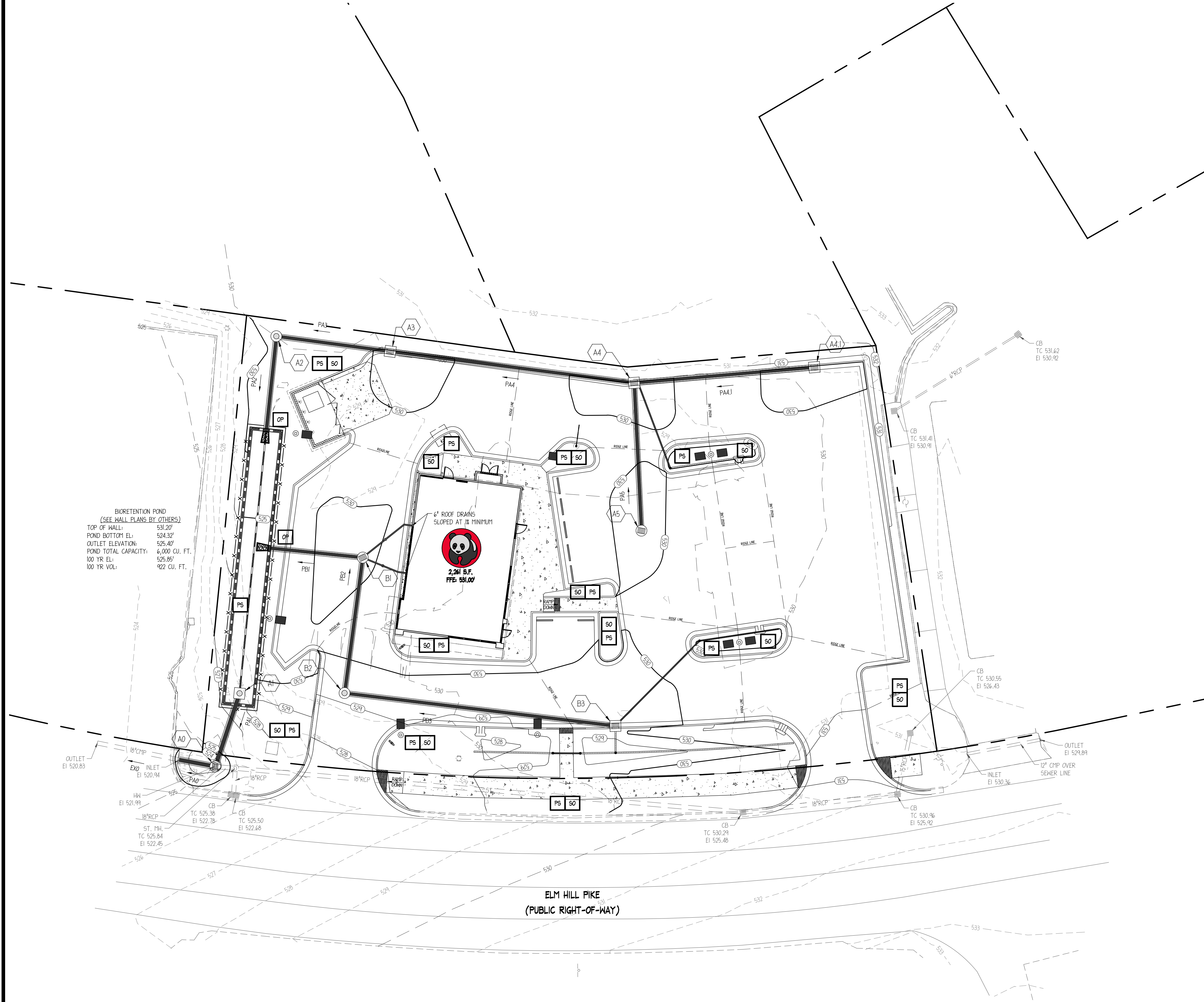
ESPC PLAN -  
GRADING PHASE

C06.1

SHEET NUMBER

ISSUE FOR PERMIT

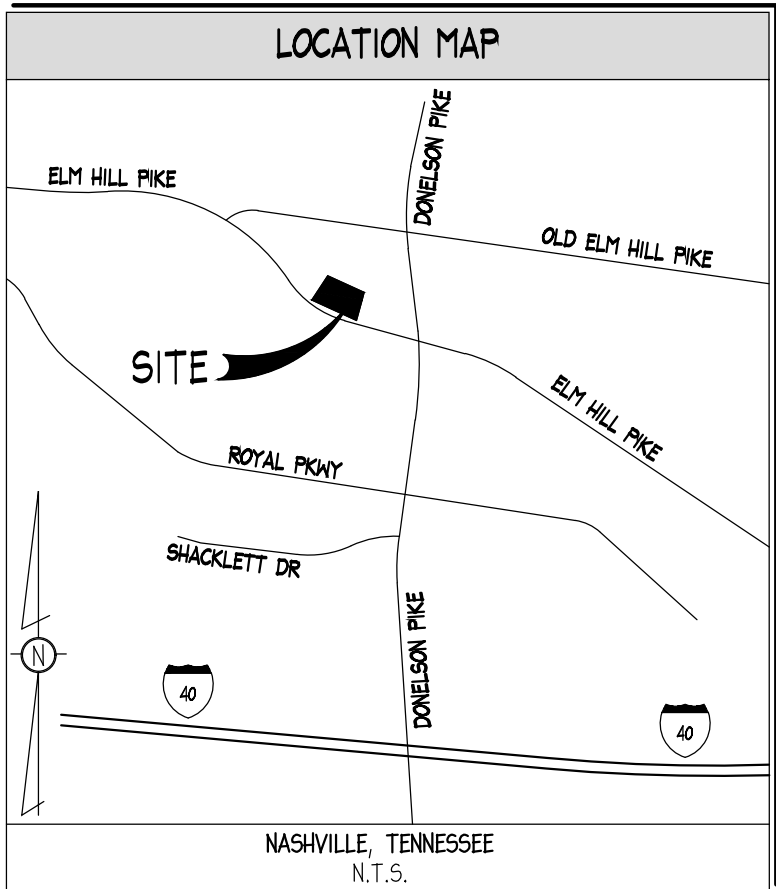




EROSION CONTROL LEGEND

| ESPC BMP                            | LINETYPE/SYMBOL | REFERENCE                 |
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EROSION CONTROL ACTIVITY SCHEDULE

| ACTIVITY                                 | MONTH 1 | MONTH 2 | MONTH 3 | MONTH 4 |
|--|---------|---------|---------|---------|
| START CONSTRUCTION                       |         |         |         |         |
| INSTALLATION OF EROSION CONTROL DEVICES  |         |         |         |         |
| CLEARING AND GRUBBING                    |         |         |         |         |
| GRADING                                  |         |         |         |         |
| TEMPORARY VEGETATION AT 14 DAY INTERVALS |         |         |         |         |
| STORM SEWER SYSTEM INSTALLATION          |         |         |         |         |
| PAVING                                   |         |         |         |         |
| BUILDING PAD CONSTRUCTION                |         |         |         |         |
| INSTALLATION OF UTILITIES                |         |         |         |         |
| PERMANENT VEGETATION AT 30 DAY INTERVALS |         |         |         |         |
| MAINTENANCE OF EROSION CONTROL DEVICES   |         |         |         |         |
| REMOVE EROSION CONTROL DEVICES           |         |         |         |         |
| TREE PROTECTION FENCING                  |         |         |         |         |
| END OF CONSTRUCTION                      |         |         |         |         |

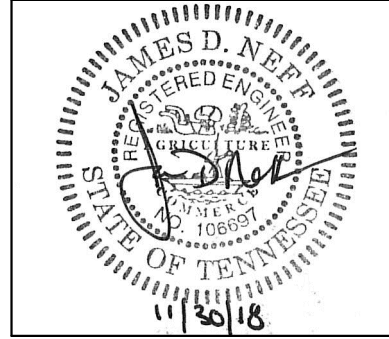
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ANTICIPATED START DATE: TBD

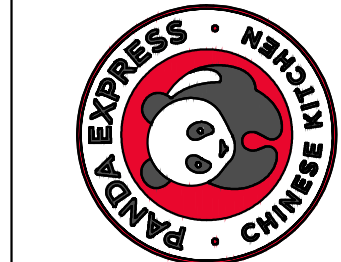
ANTICIPATED COMPLETION DATE: TBD



14499 N DALE HENRY HWY  
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813.367.0084  
INGENIUM@INGENIUMENTERPRISES.COM



PANDA EXPRESS, INC.  
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REVISION HISTORY

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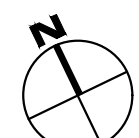
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PROJ # 180050  
DWG NAME 180050 C06.DWG  
ISSUE DATE 11/30/2018  
PROJ TGR LLC

ESPC PLAN -  
FINAL PHASE

C06.2  
SHEET NUMBER

24-HOUR CONTACT:  
CLAY WORTHY  
602-931-6540



0 20 40 Feet

CONTRACTOR SHALL PROTECT ALL ITEMS OUTSIDE LIMITS OF CONSTRUCTION UNLESS OTHERWISE NOTED IN THE CONSTRUCTION PLANS OR SPECIFICATIONS.

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES (LOCATIONS AND ELEVATIONS) PRIOR TO STARTING CONSTRUCTION AND ALERT ENGINEER TO ANY DISCREPANCIES IMMEDIATELY.

ISSUE FOR PERMIT



Construction Exit - CE



DEFINITION

A stone-stabilized pad located at any point where traffic will be leaving a construction site to a public roadway.

PURPOSE

To reduce or eliminate the transport of material from the construction area onto a public roadway.

CONDITIONS

This practice is applied at appropriate points of construction egress. Geotextile underliners are required to stabilize and support the pad aggregates.

DESIGN CRITERIA

Formal design is not required. A typical construction exit is shown in Figure 1. The following standards should be used:

**Aggregate Size:** Stone should be in accordance with TDOT #1 or #2 stone specifications (1.5 to 3.5 inch stone),

washed, and well graded. Refer to specification **Riprap - RR** for aggregate size tables.

**Pad Thickness:** The gravel pad should have a minimum thickness of 6 inches.

**Pad Length and Width:** At a minimum, the width should equal full width of all points of vehicular egress, but not less than 20 feet wide. Pad length should be no less than 50 feet.

**Washing:** If the action of the vehicle traveling over the gravel pad does not sufficiently remove the material, the tires should be washed prior to exit onto public roadways. When washing is required, the wash rack should be designed for the anticipated traffic loads and placed on level ground, on a pad of coarse aggregate (such as TDOT #57). A typical wash rack is shown in Figure 2. The wash rack design may consist of other materials suitable for truck traffic that remove mud and dirt. The wash rack should have provisions that intercept the sediment-laden runoff and direct it into a sediment trap or sediment basin.

CE - 1

**Location:** The exit should be located wherever traffic will be leaving a construction site directly onto a public roadway.

CONSTRUCTION SPECIFICATIONS

It is recommended that the exit area be excavated to a depth of 3 inches and be cleared of all vegetation and roots.

**Waterbar Diversion:** On sites where the grade toward the public roadway is greater than 2%, a waterbar diversion 6 to 8 inches high with 3:1 side slopes should be constructed across the foundation of the construction exit to prevent storm water runoff from leaving the site. Refer to specification **Diversion - D**. Diverted runoff should be directed into a sediment trap or sediment basin. Refer to specification **Sediment Trap - ST** or **Sediment Basin - SB**.

**Geotextile:** The geotextile under-liner must be placed the full length and width of the exit. Refer to specification **Geotextile - GE**.

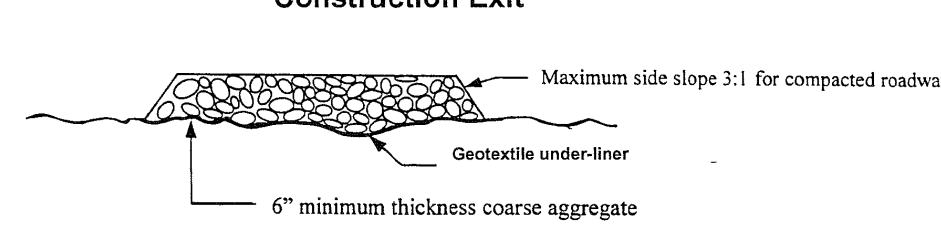
INSPECTIONS

Inspections of construction exit should be made at the end of each shift or workday.

MAINTENANCE

The exit should be maintained in a condition that will prevent tracking or flow of material onto public rights-of-way. This may require periodic top dressing with fresh stone, as conditions demand, and repair and/or cleanout of any structures to trap sediment. All materials spilled, dropped, washed, or tracked from vehicles or site onto roadways or into storm drains must be removed immediately.

Construction Exit



SECTION A-A

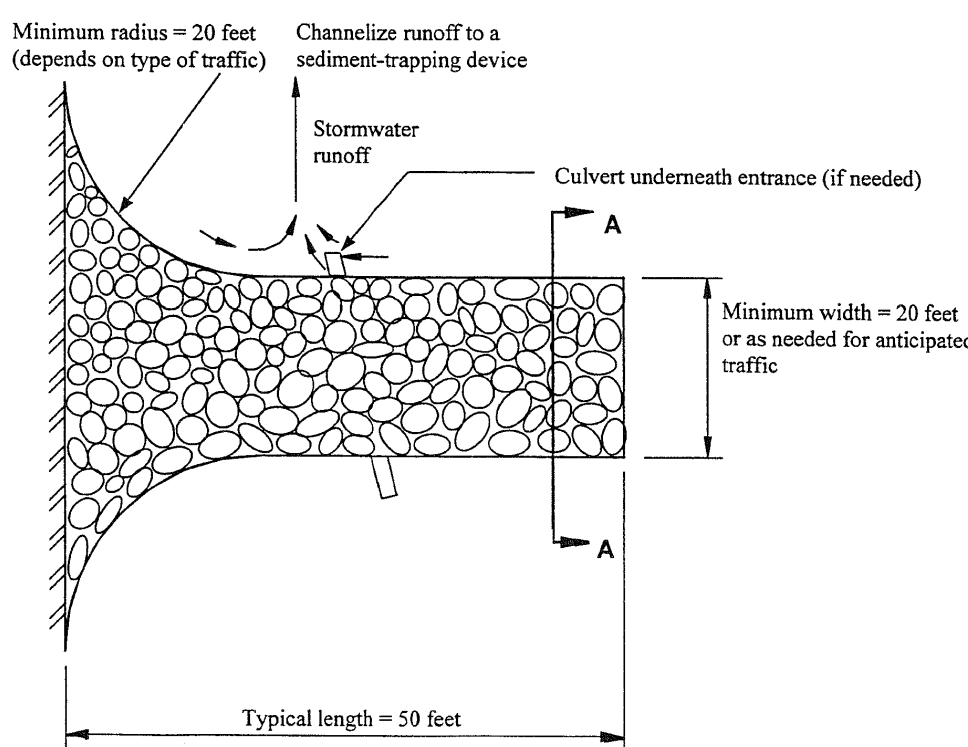
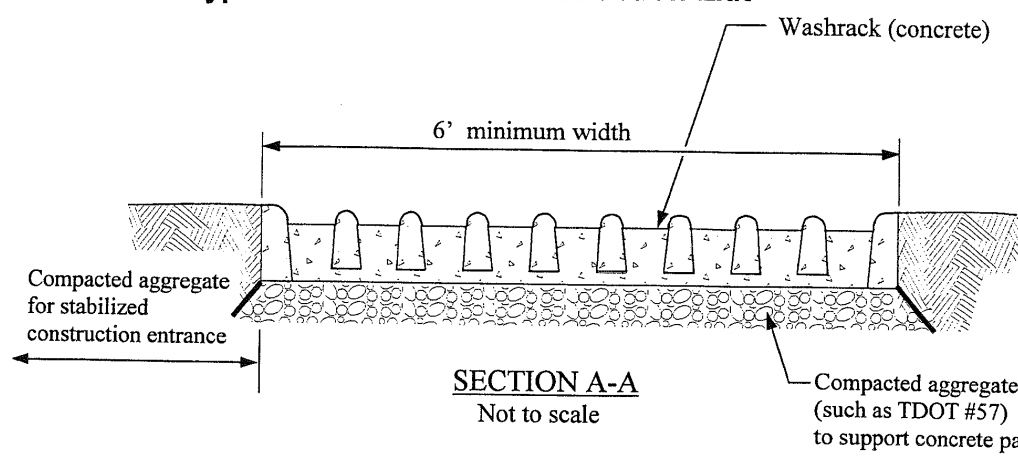


Figure 1

Source: Knoxville Engineering Department

CE - 3

Typical Washrack for Construction Exit



SECTION A-A

Not to scale

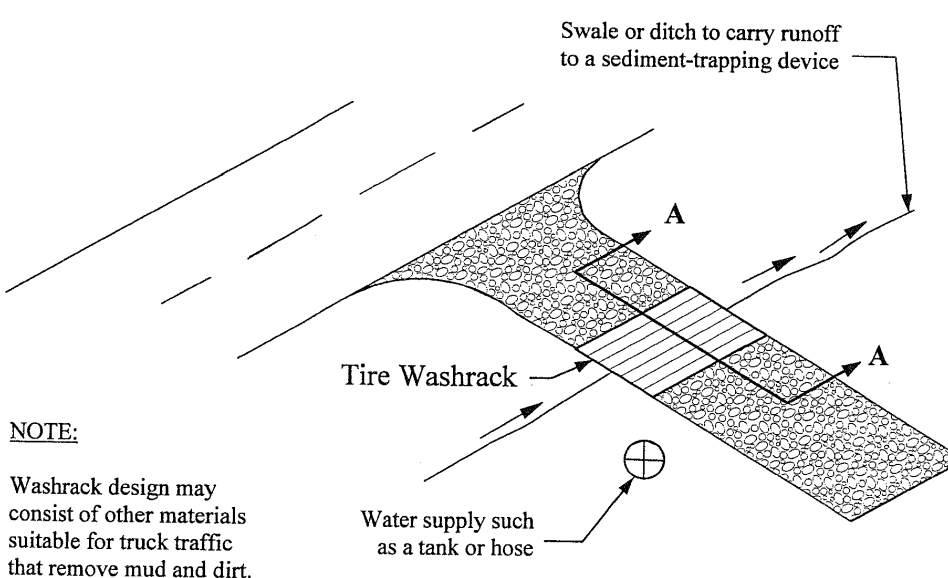


Figure 2

Source: Knoxville Engineering Department

CE - 4

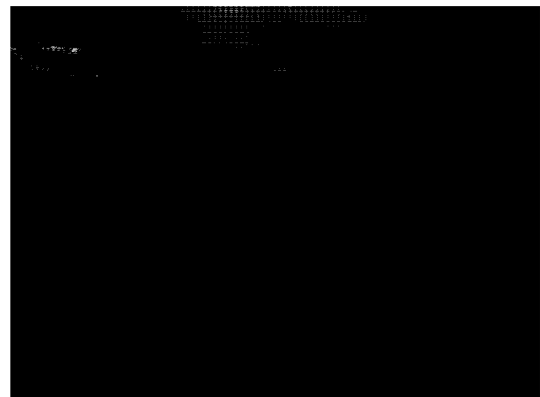
CE CONSTRUCTION EXIT NTS

Chapter 7

Management Practices

STABILIZATION PRACTICES

7.11 ROLLED EROSION CONTROL PRODUCTS



ROLLED EROSION CONTROL PRODUCT

Definition

Roller erosion control products (RECPs) are manufactured sheets of multi materials (e.g., straw, coir, wood fibers, curled wood, etc.) that are bound into netting composed of either photodegradable synthetic or natural materials. They are usually delivered to a construction site in rolls which are then installed as a protective covering designed to protect soil and hold seed and mulch in place on slopes and in channels so that vegetation can become well established. This section only addresses RECPs applied to slopes. RECPs as channel linings are covered in Section 7.27 Channels.

Purpose

To reduce soil erosion and assist in the growth, establishment and protection of temporary or permanent vegetation on steep slopes.

Conditions Where Practice Applies

RECPs can be applied to steep slopes where erosion hazards are high and conventional seeding is likely to be too slow in providing adequate protective cover. RECPs shall be applied to cut or fill slopes of 2.5:1 or steeper with a height of 10 feet or greater in need of protection during establishment of temporary or permanent ground cover.

Planning Considerations

There are many types of erosion control nets and blankets on the market that may be appropriate in certain circumstances. In general, most nets require mulch in order to prevent erosion because they have a fairly open structure. Blankets typically do not require mulch because they usually provide complete protection of the surface.

Good ground contact is critical to the effectiveness of these products. If good ground contact is not achieved, runoff can concentrate under the product, resulting in significant erosion. It is preferred that loose woven netting made with natural fibers be used.

Most netting used with blankets is photodegradable, meaning they break down under sunlight (not UV stabilized). However, this process can take months or years even under bright sun. Once vegetation has established, sunlight does

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not reach the mesh. It is not uncommon to find non-degraded netting still in place several years after the installation. This can be a problem if maintenance requires the use of mowers or ditch cleaning equipment. In addition, birds and small animals can become trapped in the netting.

Biodegradable blankets are available for use in sensitive areas. These organic blankets are usually held together with a fiber mesh and stitching which may last up to one year.

Design Criteria

Formal design of RECPs applied to slopes is not required. However, for each location erosion control blankets are used, the type of blanket should be indicated in the EPSC Plans.

The use of erosion control blankets on cut or fill slopes may be considered for the following conditions:

- In flat or rolling terrain, on 2H:1V or 3H:1V fill slopes and/or 2H:1V or 3H:1V cut slopes (in soils) that are 20 feet or greater in height;
- In mountainous or hilly terrain, 2H:1V or 3H:1V fill slopes and/or 2H:1V or 3H:1V cut slopes (in soils) that are 30 feet or greater in height;
- On slopes built of highly erodible soils such as sandy/loess soils in West Tennessee;
- On slopes running adjacent to a stream or adjacent to a large ditch or channel that empties directly into high-quality or sediment-impaired waters near the roadway construction;
- At point of stormwater runoff concentration where off-site runoff threatens stability of cut slopes.

On sites with flat slopes or short slope lengths, it may be possible to substitute mulch control netting or open weave textiles for erosion control blanket, based on economic considerations.

In addition to the above criteria, the designer should consider the design life of the erosion control blanket. The designer should ensure that it is possible for the permanent vegetation to become well established before the degradable portions of the blanket have degraded to the point that their resistance to erosion is significantly reduced.

Construction Specifications

Even if properly designed, if not properly installed, erosion control blankets will likely not function as desired. Proper installation is imperative. Even if properly installed, if not properly tended and nourished, vegetation will likely not grow as desired. Proper seed/vegetation selection is also imperative.

Grade the surface of installation areas so that the ground is smooth and soil loose. When seeding prior to installation, follow the steps for seed bed preparation, soil amendments, and seeding. All gullies, rills, and any other disturbed areas must be fine graded prior to installation. Spread seed before blanket installation. (Important: Remove all large rocks, dirt clods, stumps, roots, grass clumps, trash, and other obstructions from the soil surface to allow for direct contact between the soil

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surface and the blanket.) Terminal anchor trenches are required at blanket end. Terminal anchor trenches should be a minimum of 12 inches in depth and 6 inches in width.

**Installation for Slopes:** Place the blanket 2-3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Pin the blanket at 1 foot intervals along the bottom of the trench, backfill, and compact. Unroll the blanket down (or along) the slope maintaining direct contact between the soil and the blanket. Overlap adjacent rolls a minimum of 3 inches. Pin the blanket to the ground using staples or pins in a 3 foot center-to-center pattern or as recommended by manufacturer.

**Anchoring Devices:** 11 gauge, at least 6 inches length by 1 inch width, staples or 12 inch minimum length wooden stakes are recommended for anchoring the blanket to the ground.

Drive staples or pins so that the top of the staple or pin is flush with the ground surface. Anchor each blanket every 3 feet along its center. Longitudinal overlaps must be sufficient to accommodate a row of anchors and uniform along the entire length of overlap and anchored every 3 feet along the overlap length. Roll ends may be spliced by overlapping 1 foot (in the direction of water flow), with the upstream/upslope mat placed on top of the downstream/downslope blanket. This overlap should be anchored at 1 foot spacing across the blanket. When installing multiple width mats heat seamed in the factory, all factory seams and field overlaps should be similarly anchored.

Good contact with the ground must be maintained, and erosion must not occur beneath the blanket.

Any areas of the blanket that are damaged or not in close contact with the ground shall be repaired and stapled.

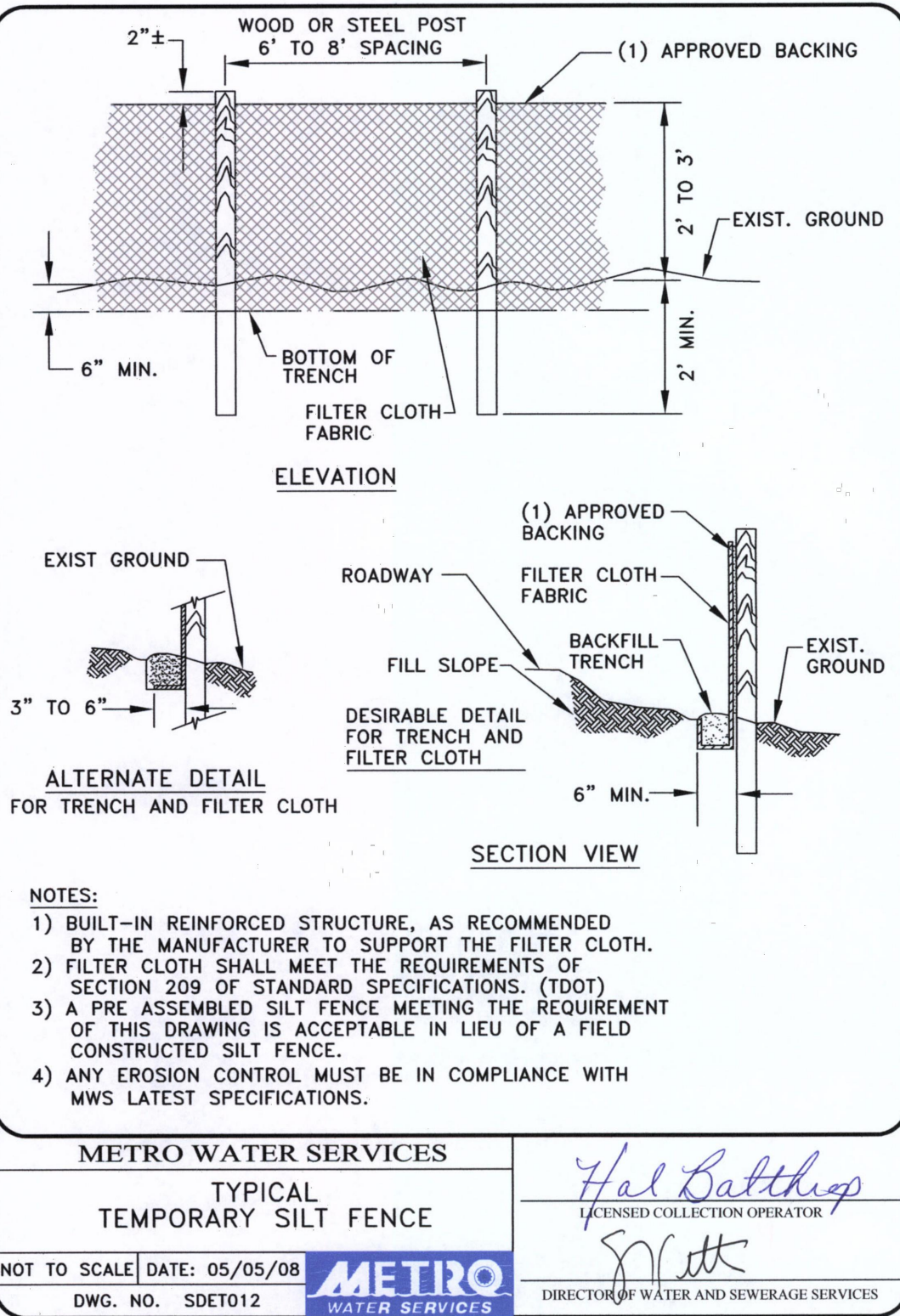
If erosion occurs due to poorly controlled drainage, the problem shall be fixed and the eroded area repaired.

Monitor and repair the blanket as necessary until ground cover is established. Inspections should include walking across the slope to check for erosion gullies that can be felt rather than seen.

Maintenance and Inspection Points

References

TDOT Design Division Drainage Manual  
TDOT Erosion Control Standard Drawing EC-STR-34  
North Carolina Erosion and Sediment Control Planning and Design Manual



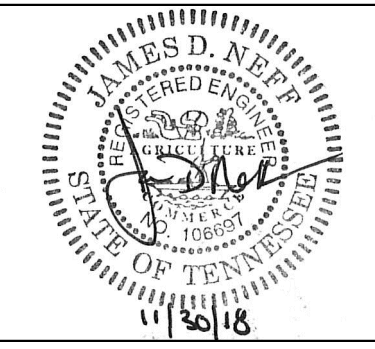
METRO WATER SERVICES  
TYPICAL  
TEMPORARY SILT FENCE  
NOT TO SCALE DATE: 05/05/08 DWG. NO. SDET012  
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DIRECTOR OF WATER AND SEWERAGE SERVICES

RECP ROLLED EROSION CONTROL PRODUCT NTS

SF SILT FENCE NTS



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DWG NAME 180050 C06.DWG  
ISSUE DATE 11/30/2018  
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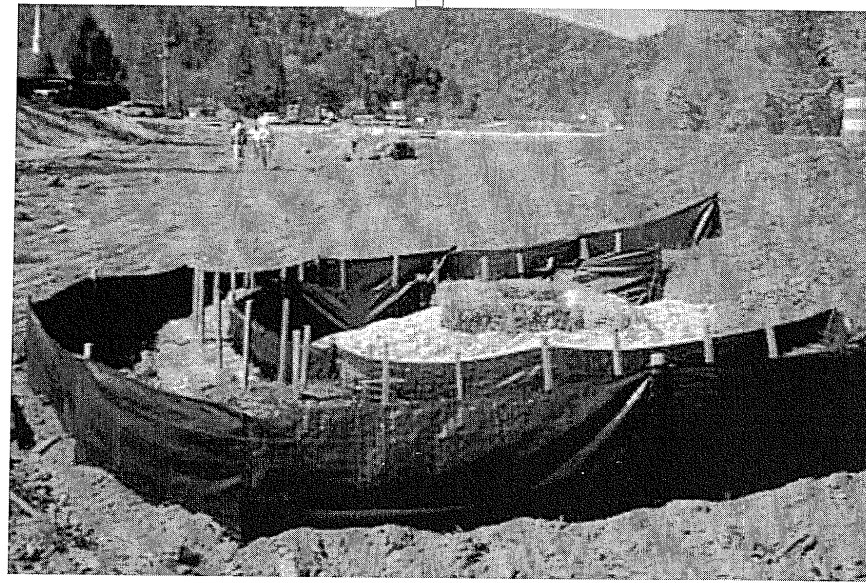
C06.3

SHEET NUMBER

ISSUE FOR PERMIT



Storm Drain Inlet Protection - IP



DEFINITION

A temporary protective device formed around a storm drain drop inlet to trap sediment.

PURPOSE

To prevent sediment from entering storm drainage systems, prior to temporary or permanent stabilization of the disturbed area.

CONDITIONS

Storm drain inlet protection should be installed at or around all storm drain drop inlets that receive runoff from disturbed areas.

DESIGN CRITERIA

Many sediment-filtering devices can be designed to serve as storm drain inlet protection. Inlet protection must be self-draining unless otherwise protected in a fashion that will not present a safety hazard. The drainage area served by the inlet protection should be no greater than one-half acre. Runoff from larger drainage areas

should be routed to a Sediment Trap or Sediment Basin. Refer to specifications for Sediment Trap - ST or Sediment Basin - SB.

If runoff may bypass the protected inlet, a berm should be constructed on the down slope side of the structure to prevent undercutting and erosion under the structure. Refer to Diversion - DI. Also, a stone filter ring may be used on the up slope side of the inlet to slow runoff and filter larger soil particles. Refer to Filter Ring - FR.

CONSTRUCTION SPECIFICATIONS

Inlet protection may be constructed on natural ground surface, on an excavated surface, or on machine compacted fill.

**Silt Fence Inlet Protection - IP-SF** This method of inlet protection is applicable where the inlet drains a relatively flat area (slope no greater than 5%) and should not apply to inlets receiving concentrated flows, such as in street or highway medians. As shown in Figure 1, Type C silt fence supported by 2x4-inch wood or equivalent steel posts, with a

minimum length of three feet, should be used. The stakes should be spaced evenly around the perimeter of the inlet a maximum of 3 feet apart, and securely driven into the ground, approximately 18 inches deep.

The silt fence should be entrenched 12 inches and backfilled with crushed stone or compacted soil. Silt fence and wire should be securely fastened to the posts, and silt fence ends must be overlapped a minimum of 18 inches or wrapped together around a post to provide a continuous barrier around the inlet. Refer to Silt Fence - SF for installation requirements. Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection.

**Baffle Box Inlet Protection - IP-BB** This method is applicable for inlets receiving runoff with a higher volume or velocity. As shown in Figure 2, the baffle box should be constructed of 2" x 4" or 4" x 4" boards spaced a maximum of 1 inch apart or of plywood with weep holes 2 inches in diameter. The weep holes should be placed approximately 6 inches on center vertically and horizontally. The entire box is wrapped in Type C filter fabric that should be entrenched 12 inches and backfilled. Refer to Silt Fence - SF for installation requirements.

Clean coarse aggregate should be placed outside the box, all around the inlet, to a depth of 2 to 4 inches. Coarse aggregate should be TDOT #3, #357, or #5. If the aggregate filter becomes clogged with sediment so that it no longer adequately performs its function, the aggregate should be pulled away from the structure, cleaned, and replaced. Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection.

**Block and Gravel Inlet Protection - IP-BG** This method of inlet protection is applicable where heavy flows are expected and where an overflow capacity is necessary to prevent excessive ponding around the structure. As shown in Figure 3, one block is placed on each side of the structure on its side in the bottom row to allow pool drainage. The foundation should be excavated at least 2 inches below the crest of the storm drain. The bottom rows of blocks are placed against the edge of the storm drain for lateral support

and to avoid washouts when overflow occurs. If needed, lateral support may be given to subsequent rows by placing 2" x 4" wood studs through block openings.

Hardware cloth or comparable wire mesh with 1/2 inch openings should be fitted over all block openings to hold gravel in place. Clean coarse aggregate should be placed up to 2 inches below the top block on a 2:1 slope or flatter and smoothed to an even grade. Coarse aggregate should be TDOT #3, #357, or #5. If the aggregate filter becomes clogged with sediment so that it no longer adequately performs its function, the aggregate should be pulled away from the structure, cleaned, and replaced. Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection.

**Gravel Inlet Protection - IP-G** This method of inlet protection is applicable where heavy concentrated flows are expected. As shown in Figure 4, wire mesh should be laid over the drop inlet grate so that the wire extends a minimum of one foot beyond each side of the inlet structure. Wire mesh with 1/2 inch openings should be used. Clean coarse aggregate should be placed over the entire inlet structure, to a total depth of at least 12 inches. The aggregate should extend beyond the inlet structure at least 18 inches on all sides. Coarse aggregate should be TDOT #3, #357, or #5.

Sediment should be removed when the sediment has accumulated to one-half the height of the inlet protection. If the aggregate filter becomes clogged with sediment so that it no longer adequately performs its function, the aggregate should be pulled away from the structure, cleaned, and replaced.

**Sod Inlet Protection - IP-S** This method of inlet protection is applicable only at the time of permanent seeding, to protect the inlet from sediment and mulch material until permanent seeding has become established. As shown in Figure 5, the sod should be placed to form a turf mat covering the soil for a distance of 4 feet from each side of the inlet structure. Sod strips should be staggered so that adjacent strip ends are not aligned. Refer to Disturbed Area Stabilization (With Sod) - SD for soil

preparation, and sod installation and maintenance.

INSPECTIONS

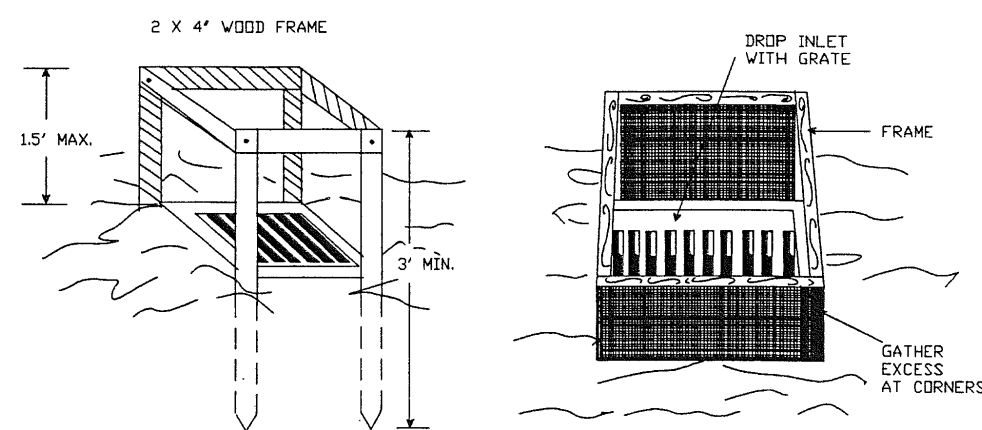
Inspections of storm drain inlet protection methods should be made before anticipated storm events (or series of storm events such as intermittent showers over one or more days) and within 24 hours after the end of a storm event of 0.5 inches or greater, and at least once every fourteen calendar days. Where sites have been finally or temporarily stabilized, such inspection may be conducted only once per month.

MAINTENANCE

Maintenance needs identified in inspections or by other means should be accomplished before the next storm event if possible, but in no case more than seven days after the need is identified.

Sediment should not be allowed to wash into the storm drain inlet. It should be removed from the inlet protection and disposed of and stabilized so that it will not enter the inlet again. When the contributing drainage area has been permanently stabilized, all materials and any sediment should be removed, and either salvaged or disposed of properly. The disturbed area should be brought to proper grade, then smoothed and compacted. Appropriately stabilize all disturbed areas around the inlet.

Silt Fence Inlet Protection - IP-SF



Perspective Views

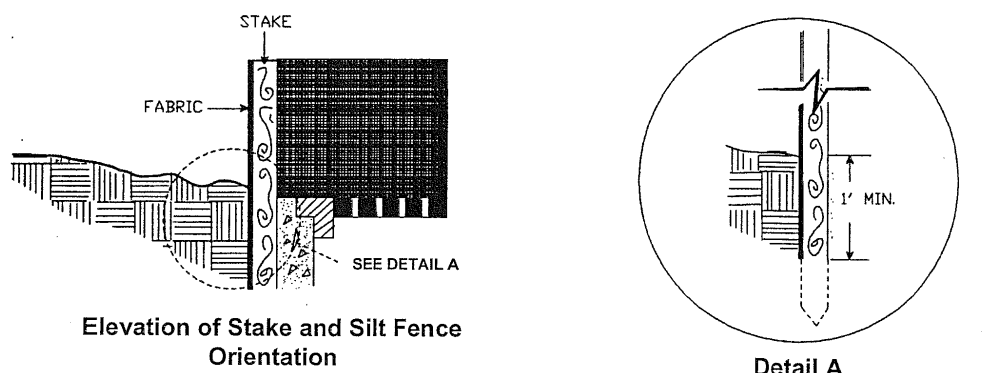


Figure 1

Source: NC SCC

IP - 1

IP - 2

IP - 3

IP - 4

Block and Gravel Inlet Protection - IP-BG

Baffle Box Inlet Protection - IP-BB

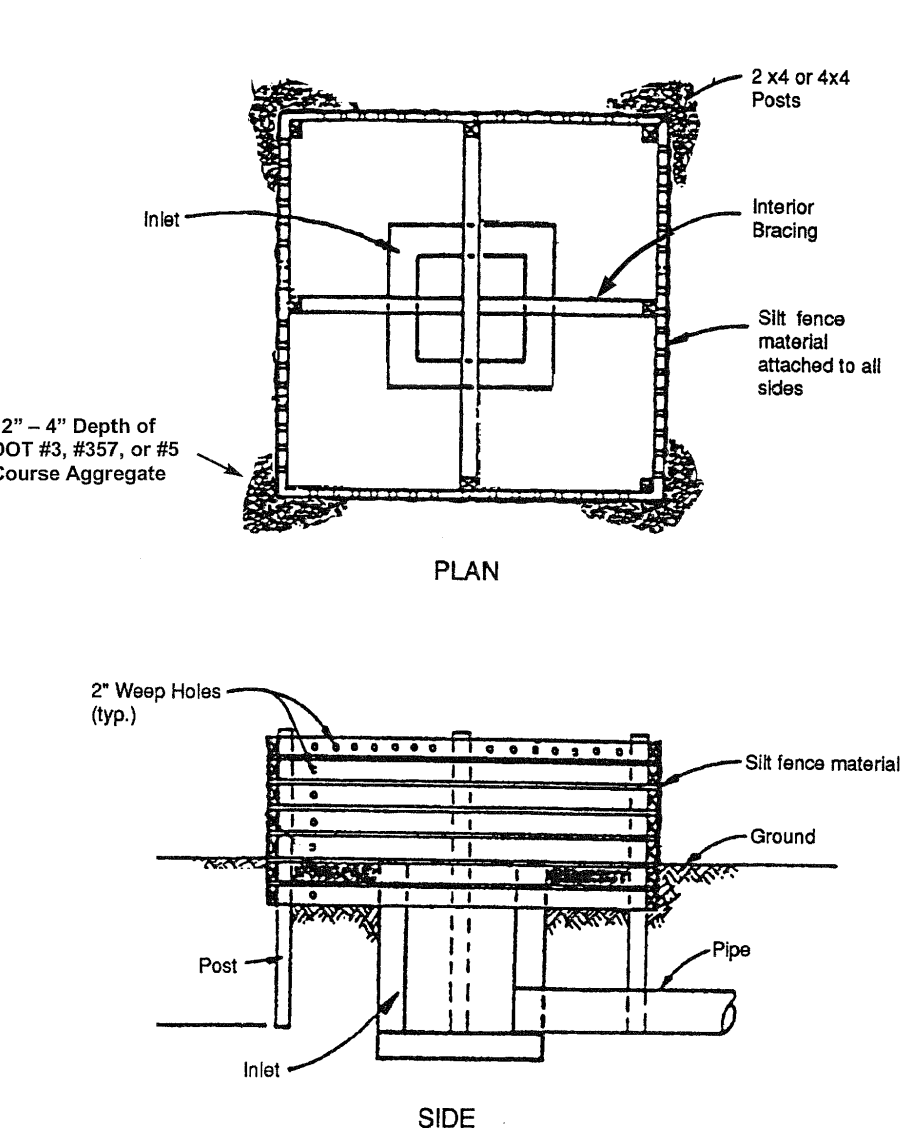


Figure 2

Source: GA SWCC

IP - 5

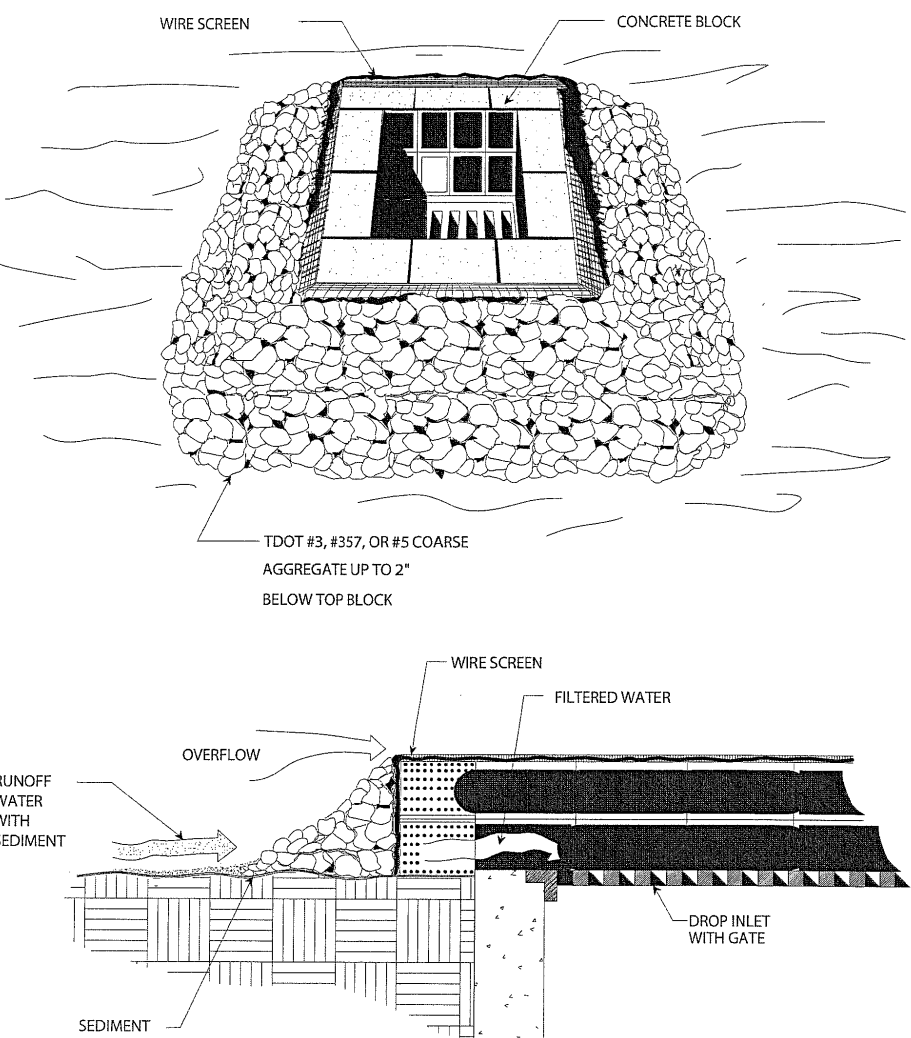


Figure 3

Source: VA DSWC

IP - 6

Sod Inlet Protection - IP-S

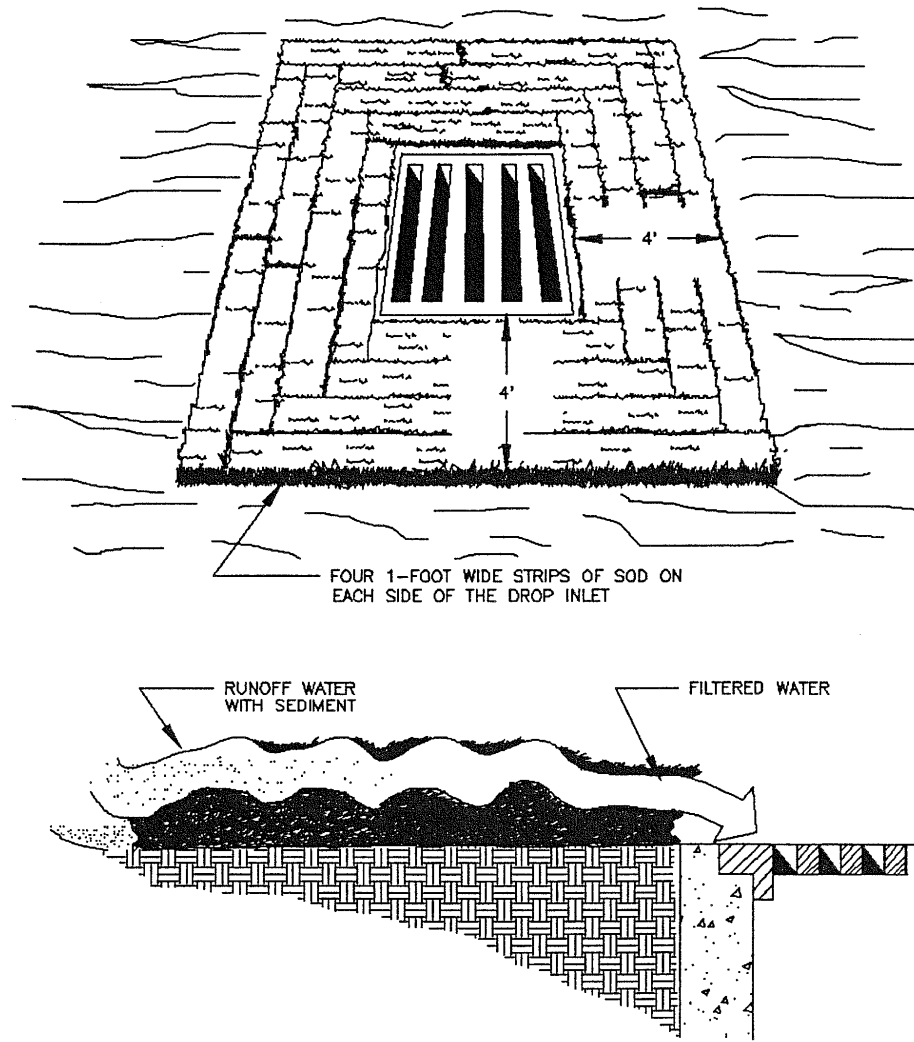
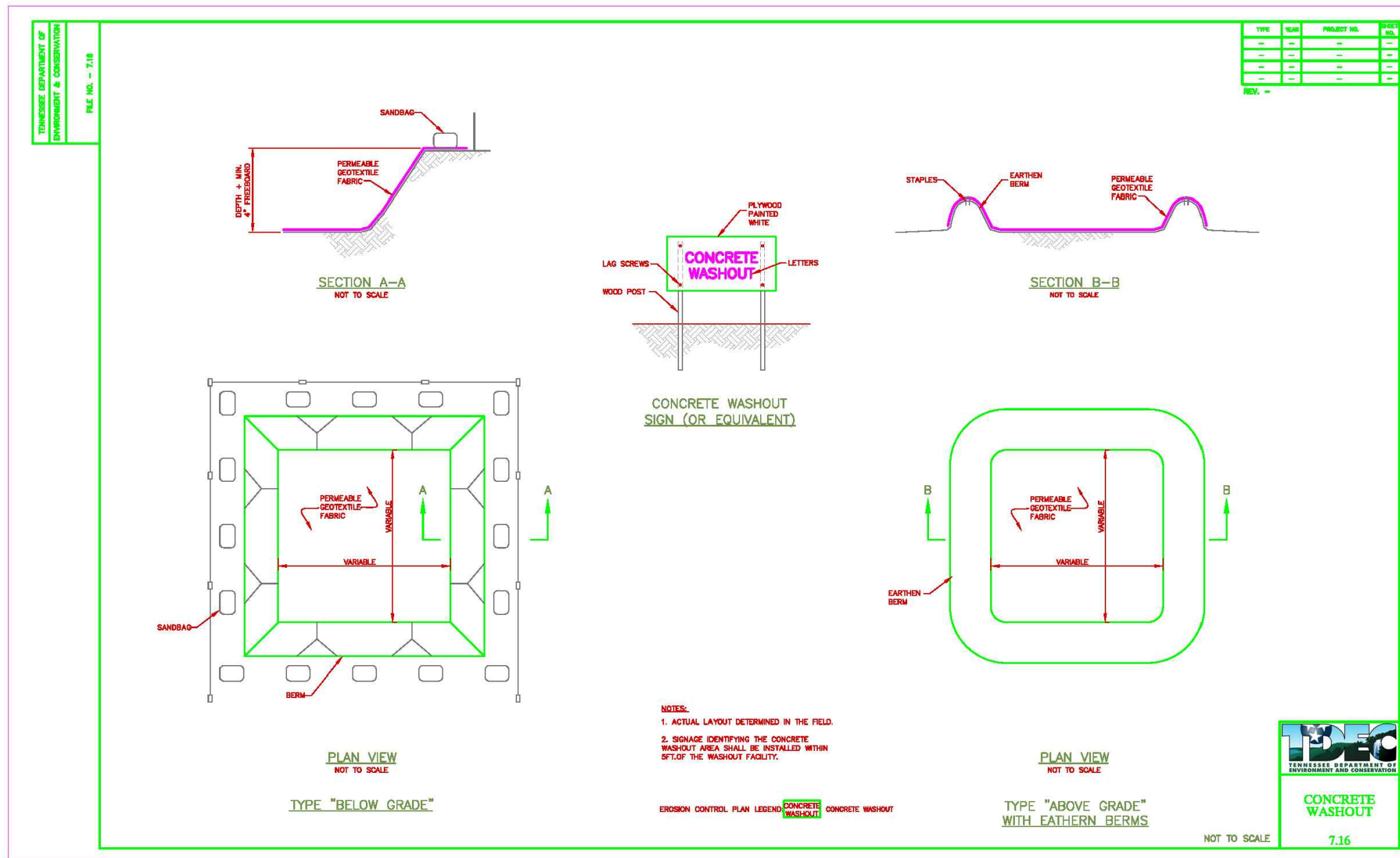


Figure 5

Source: VA DSWC

IP - 8



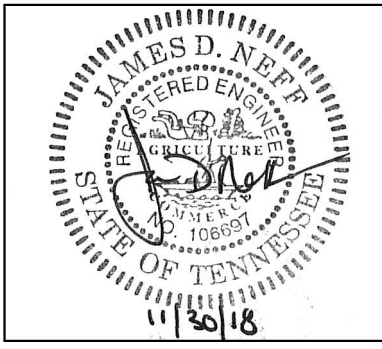
CW CONCRETE WASHOUT NTS

IP STORM DRAIN INLET PROTECTION NTS



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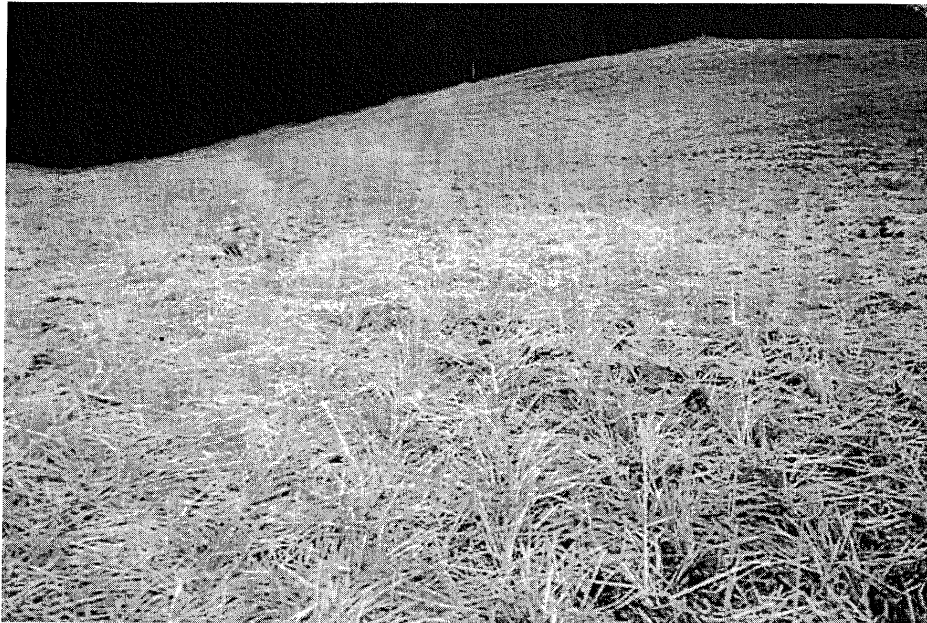
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ISSUE FOR PERMIT



Disturbed Area Stabilization (With Mulch) – MU



DEFINITION

Applying hay, straw, mulch, plant residues, or other suitable materials, produced on the site if possible, to the soil surface.

PURPOSE

- To reduce runoff and erosion
- To conserve moisture
- To promote germination of seed
- To prevent surface compaction or crusting
- To protect seed from birds
- To modify soil temperature
- To increase biological activity in the soil

CONDITIONS

Mulch may be used to promote vegetation germination and growth during a vegetative stabilization practice, or may be used as a temporary stabilization measure on its own where seed may not germinate due to temporary conditions.

CONSTRUCTION SPECIFICATIONS

**Mulching Without Seeding:** This standard applies to cleared areas where seed may not have a suitable growing season to produce an erosion-retardant cover, but can be stabilized with a mulch cover. Mulch can be used as an erosion control device for up to six months, but it shall be applied at the appropriate depth (depending on the material used), anchored, and have a continuous 95% cover or greater of the soil surface. Maintenance is required to maintain 95% cover.

**Mulching With Seeding:** Mulch should be applied when seeding for vegetation stabilization. It significantly assists germination by protecting the seed from birds, by holding moisture at the surface of the soil, and by reducing soil surface temperature. Mulch applied to seeded areas shall achieve 75% soil cover.

**Site Preparation:** Consider these factors when preparing to use mulch:

- Grade to enable the use of equipment for applying and anchoring mulch.
- Install best management practices as required such as diversions, terraces, and/or sediment barriers.
- Loosen compacted soil to a minimum depth of 4 inches if using mulch while seeding.

**Mulching Materials:** Select one of the following materials and apply at the rate indicated:

- Dry straw or hay shall be applied at a rate that provides 95% or greater soil coverage.
- Wood waste (chips, sawdust or bark) shall be applied at a rate that provides 95% or greater soil coverage. **Organic material from the clearing stage of development should remain on site, be chipped, and applied as mulch.** This method of mulching can greatly reduce erosion control costs. This method should not, however, be used in conjunction with seeding due to soil acidification and nitrogen reduction problems that the decomposition of the "green" material will produce.

**Anchoring Mulch:** Anchor straw or hay mulch immediately after application by one of the following methods:

- Emulsified asphalt can be (a) sprayed uniformly onto the mulch as it is ejected from the blower machine or (b) sprayed on the mulch immediately following mulch application when straw or hay is spread by methods other than special blower equipment. The combination of asphalt emulsion and water shall consist of a homogeneous mixture satisfactory for spraying. The mixture

shall consist of 100 gallons of emulsified asphalt and 100 gallons of water per ton of mulch. Care shall be taken at all times to protect state waters, the public, adjacent property, pavements, curbs, sidewalks, and all other structures from asphalt discoloration.

- Hay and straw mulch may be pressed into the soil immediately after the mulch is spread. A special "crimper" or disk harrow with the disks set straight may be used. Serrated discs are preferred and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disks shall be dull enough to press the mulch into the ground without cutting it, leaving much of it in an erect position. Mulch should not be plowed into the soil.
- Synthetic tackifiers or binders may be applied in conjunction with or immediately after the mulch is spread. Synthetic tackifiers should be mixed and applied according to manufacturer's specifications. Refer to specification **Tackifiers and Binders - TB**.

MAINTENANCE


Inspection of the application should be performed along with other regularly scheduled erosion and sediment control inspections. Any areas that have washed out due to high storm water flows should be reconsidered for different BMP use, or at least retreated. Areas that have been disturbed by blowing wind should be retreated. Maintenance needs identified in inspections or by other means shall be accomplished before the next storm event if possible, but in no case more than seven days after the need is identified.

Chapter 7

Management Practices

SEDIMENT CONTROL PRACTICES

7.3.7 TUBES AND WATTLES



TUBES, WATTLES, SOCKS

Definition

A small temporary sediment barrier constructed to intercept sheet flow. In this application, wattles and tubes are primarily sediment control measures. Section 7.2.5 discusses wattles as erosion control measures used in concentrated flow applications.

Purpose

To interrupt flow, decrease velocities, pond water and allow runoff-produced sediment to settle out behind barrier.

Conditions Where Practice Applies

This practice is applicable along or on the ground contour or at the toe of slopes and aids in sediment retention. While they are generally used at regular intervals on a slope, they may also be placed at the top or toe of the slope, or at breaks in grade. In addition, they may be placed on or around the perimeter of soil stockpiles or around catch basin inlets.

Planning Considerations

The stability of tubes, wattles, and socks are very dependent upon proper staking. Thus, they may not be utilized on pavement, rocky soil or at any location where the stakes cannot be driven to the required depth.

Design Criteria

When applied on slopes, temporary sediment tubes should be placed along the contour, and the ends of the tubes should be turned upslope in order to prevent erosion which could occur as flow bypasses around the ends of the row. This will force the discharge to overtop the row away from the end points. The spacing between rows of tubes should be based on Table 7.3.7-1. The maximum drainage area to a wattle is 1/4 acre per 100 linear feet of wattle.

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Table 7.3.7-1 Wattle and Tube Spacing Table for Slope Application

| Slope | 8"  | 12"  | 18"  | 20"  | 24"  |
|-------|-----|------|------|------|------|
| 2%    | 70' | 100' | N/A  | N/A  | N/A  |
| 5%    | 30' | 60'  | 100' | 100' | 100' |
| 10%   | 20' | 30'  | 70'  | 85'  | 100' |
| 6:1   | N/A | 20'  | 40'  | 50'  | 55'  |
| 4:1   | N/A | 20'  | 30'  | 30'  | 30'  |
| 3:1   | N/A | N/A  | 20'  | 20'  | 25'  |
| 2:1   | N/A | N/A  | 20'  | 20'  | 20'  |

The size of a sediment tube for a slope application should be selected based on the gradient and length of the slope. In general, larger tube diameters should be selected for steeper or longer slopes.

Where long rows are required on a slope, the ends of the individual tube segments should be overlapped as shown on the standard drawing. This will ensure that gaps will not occur between individual tube segments, allowing sediment-laden water to escape the measure. Tube/wattle netting should be a knitted material with 1/8 to 3/8 inch openings and made of photodegradable (polypropylene, HDPE) or biodegradable (cotton, jute, coir) material.

Construction Specifications

Proper site preparation is essential to ensure sediment wattles and tubes are in complete contact with the underlying soil or underlying surface. Remove all rocks, clods, vegetation or other obstructions so installed sediment tubes have direct contact with the underlying soil or surface.

Install tubes by laying them flat on the ground. Excavate a small trench 2-3 inches in depth on the contour and perpendicular to water flow. Soil from the excavation should be stored close by for use after the wattle has been installed.

Install tubes so no gaps exist between the soil and the bottom of the sediment tube. Lap the ends of adjacent sediment tubes a minimum of 6-inches to prevent flow and sediment from passing through the field joint.

Wooden stakes should be used to fasten the wattles to the soil. When conditions warrant, a straight metal bar can be used to drive a "pilot hole" through the wattle and into the soil.

Drive wooden stakes through the wattle and angled slightly against the direction of flow (see figure 7.3.7-1). Install wooden stakes at 4 feet intervals, unless the wattle manufacturer specifies otherwise, leaving less than 1-2 inches of stake exposed above the wattle. Alternately, stakes may be placed on each side of the wattle tying across with a natural fiber twine or staking in a crossing manner ensuring direct soil contact at all times.

Terminal ends of wattles may be dog legged up slope to ensure containment and prevent channelling of sedimentation.

Backfill the upslope length of the wattle with the excavated soil and compact.

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Chapter 7

Management Practices

Straw Wattle Installation Guide

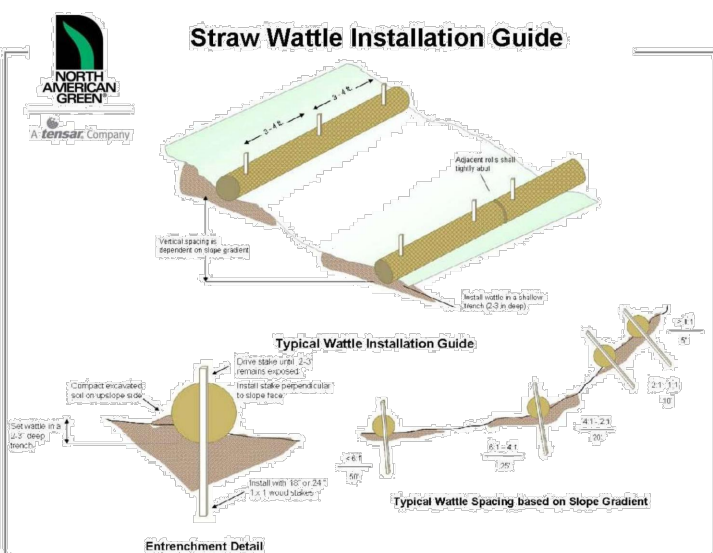


Figure 7.3.7-1 Wattle Stake Installation

Care shall be taken during installation so as to avoid damage occurring to the wattle as a result of the installation process. Should the wattle be damaged during installation, a wooden stake shall be placed either side of the damaged area terminating the log segment.

Maintenance and Inspection Points

Inspect wattles and tubes after installation for gaps under and between the joints of adjacent ends of wattles and tubes.

Repair all rills, gullies, and undercutting near wattles and tubes.

Remove all sediment deposits that impair the filtration capability of the tubes when the sediment reaches 1/3 the height of the exposed tube.

Remove and/or replace installed sediment tubes as required to adapt to changing construction site conditions.

Prior to final stabilization, backfill all trenches, depressions and other ground disturbances caused by the removal of the devices.

References

TDOT Design Division Drainage Manual  
TDOT Erosion Control Standard Drawing EC-STR-11  
South Carolina DHEC Stormwater Management BMP Handbook  
US Department of Transportation Federal Highway Administration, Western Federal Lands Highway Division, Sediment Wattle Detail WM157-20  
Earth Savers, <http://www.earth-savers.com/>

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MU DISTURBED AREA STABILIZATION (WITH MULCH) NTS

TW TUBES & WATTLES

Disturbed Area Stabilization (With Sod) – SO



DEFINITION

A permanent vegetative cover using sod brought from locations off site.

PURPOSE

- To establish immediate ground cover
- To reduce storm water runoff
- To protect the soil surface from erosion
- To reduce damage from sediment and runoff to downstream areas
- To improve aesthetics

CONDITIONS

This application is appropriate for areas that require immediate vegetative covers, such as drop inlets, grass swales, and waterways with intermittent flow.

PLANNING CONSIDERATIONS

Sod can initially be more costly than seeding, but the advantages often justify the increased initial costs.

- Immediate erosion control and green surface

- Reduced failure as compared to seed as well as the lack of weeds
- Can be established nearly year-round

Sod is preferable to seed in waterways and swales because of the immediate protection of the channel after application. Sod must be staked in concentrated flow areas (See Figure 1).

CONSTRUCTION SPECIFICATIONS

**Soil Preparation:** Bring soil surface to final grade. Clear surface of trash, woody debris, stones and clods larger than 1". Apply sod to soil surfaces only and not frozen surfaces, or gravel type soils.

Properly applied topsoil will help guarantee a stand of grass. Don't use topsoil recently treated with herbicides.

Mix fertilizer and/or lime into soil surface. Fertilize and/or lime based on soil tests and/or contact with NRCS.

**Installation:** Lay sod with tight joints and in straight lines. Don't overlap joints. Stagger joints and do not stretch sod (See Figure 2).

On slopes steeper than 3:1, sod should be anchored with pins or other approved methods. Installed sod should be rolled or tamped to provide good contact between sod and soil. Irrigate sod and the top 4" of soil immediately after installation.

Sod should not be cut or spread in extremely wet or dry weather. Irrigation should be used to supplement rainfall for a minimum of 2 - 3 weeks.

**Materials:** Sod selected should be certified. Sod grown in the general area of the project is desirable.

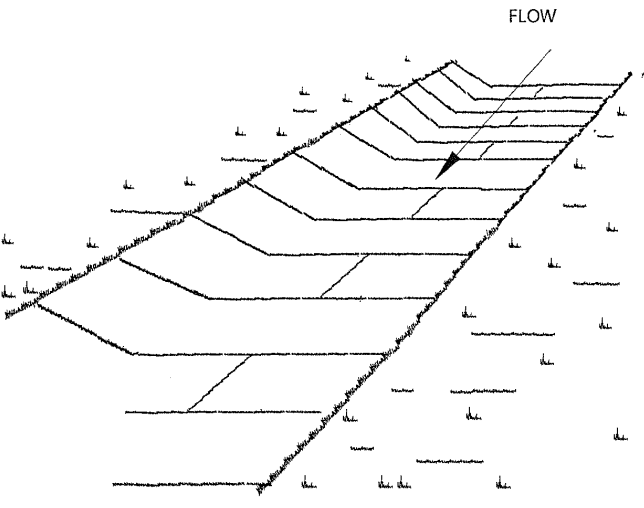
- Sod should be machine cut and contain 1/2" (+ or - 1/2") of soil, not including shoots or thatch.

- Sod should be cut to the desired size. Torn or uneven pads should be rejected.
- Sod should be cut and installed within 36 hours of digging.
- Avoid planting when subject to frost heave or hot weather if irrigation is not available.

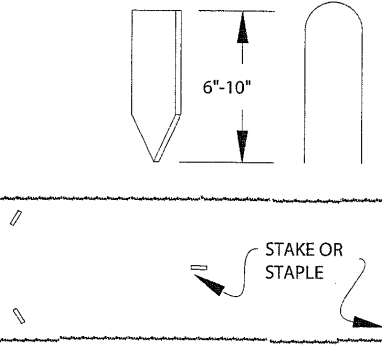
MAINTENANCE

Re-sod areas where an adequate stand of sod is not obtained. New sod should be mowed sparingly. Grass height should not be cut to less than 2"-3".

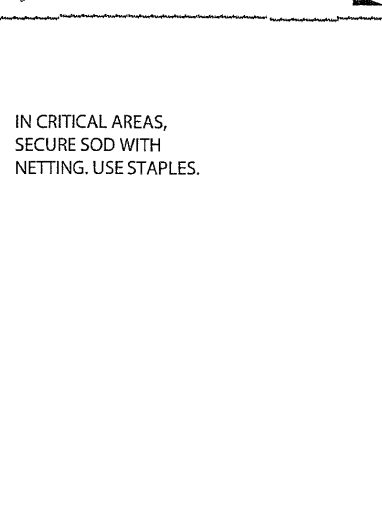
FLOW




LAY SOD ACROSS THE DIRECTION OF FLOW.



USE STAKES OR STAPLES TO FASTEN SOD FIRMLY AT THE ENDS OF STRIPS AND IN THE CENTER ON EVERY 3-4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE STAKES OR STAPLES FLUSH WITH THE GROUND.



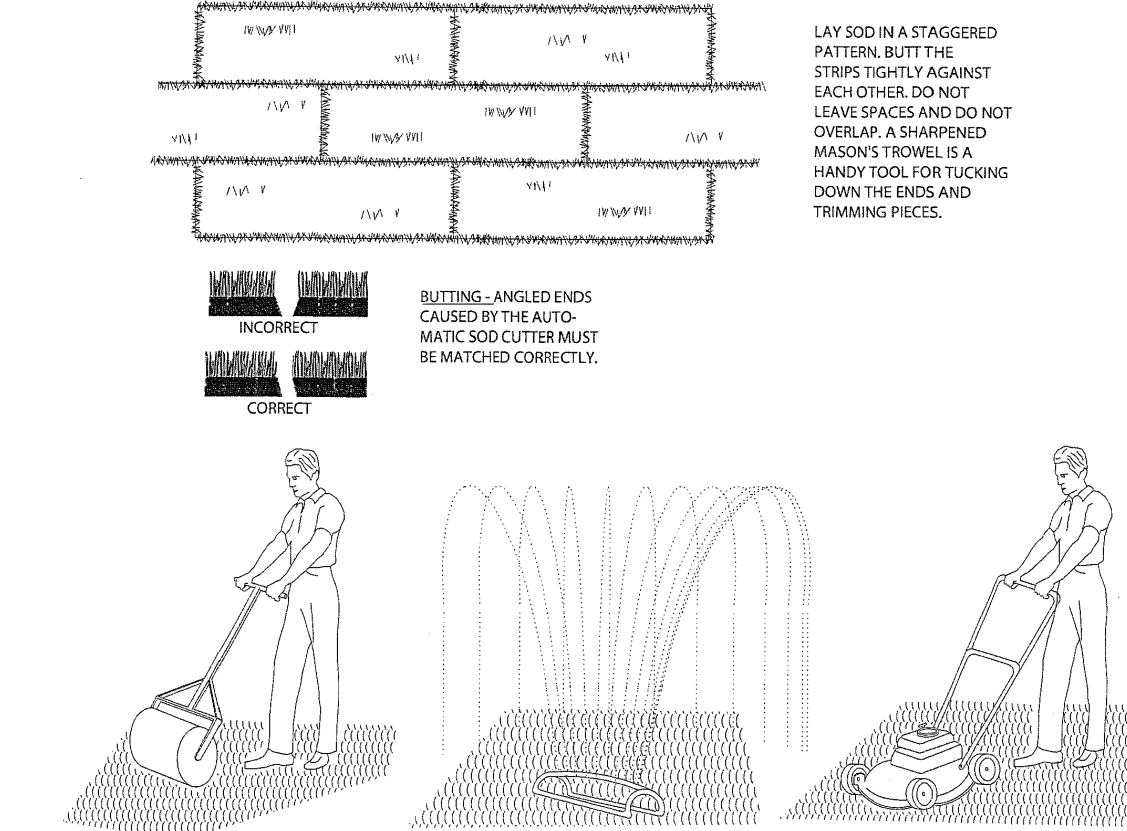
IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.



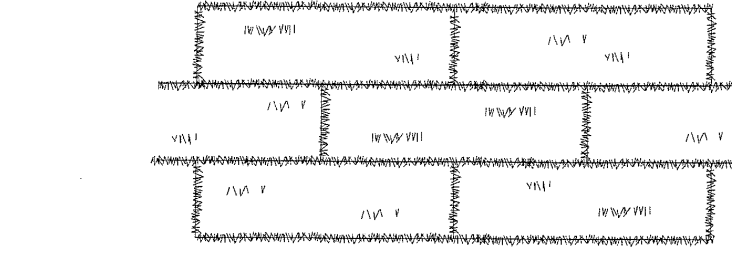
Source: VA DSWC

Figure 1

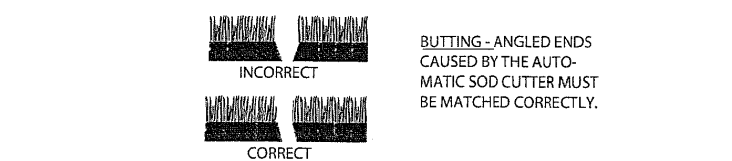
SODDING



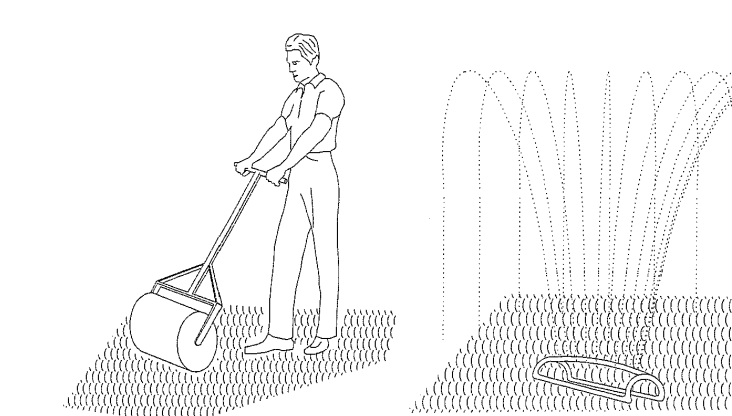
LAY SOD IN A STAGGERED PATTERN BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE EDGES AND TRIMMING PIECES.



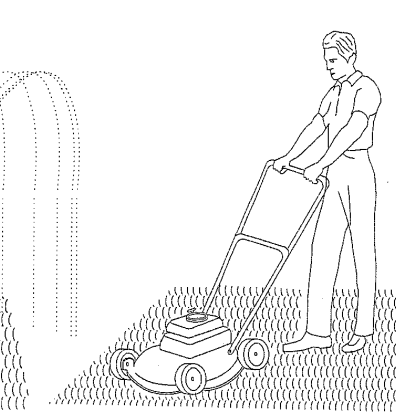
BUTTING - ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.



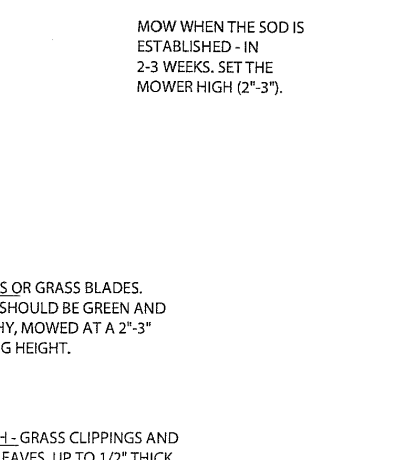
ROLL SOD IMMEDIATELY TO AVOID FIRM CONTACT WITH THE SOIL.



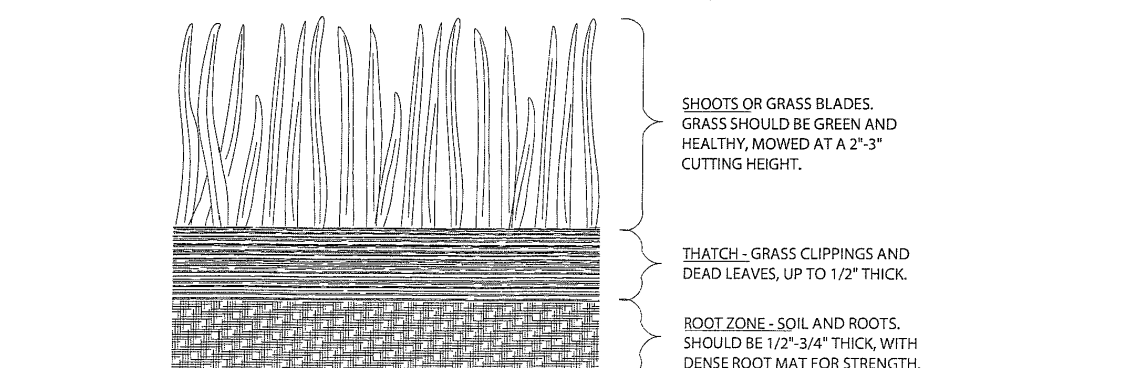
WATER TO A DEPTH OF 4" AS SOON AS POSSIBLE. WATER WELL AS SOON AS THE SOD IS LAID.



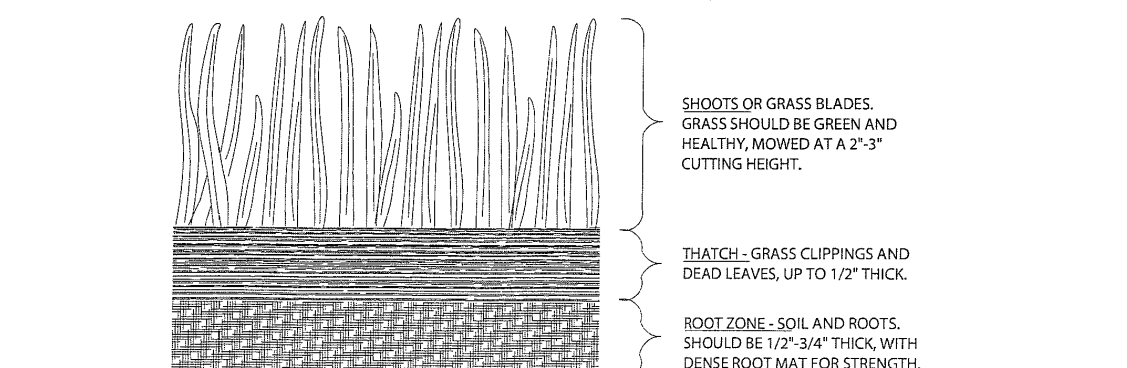
MOW WHEN THE SOD IS ESTABLISHED - IN 2-3 WEEKS, SET THE MOWER HIGH (2"-3").




APPEARANCE OF GOOD SOD




SHOOTS OR GRASS BLADES. GRASS SHOULD BE GREEN AND HEALTHY. MOWED AT A 2"-3" CUTTING HEIGHT.



THATCH - GRASS CLIPPINGS AND DEAD LEAVES UP TO 1/2" THICK.



ROOT ZONE - SOIL AND ROOTS. SHOULD BE 1/2"-3/4" THICK, WITH DENSE ROOT MAT FOR STRENGTH.



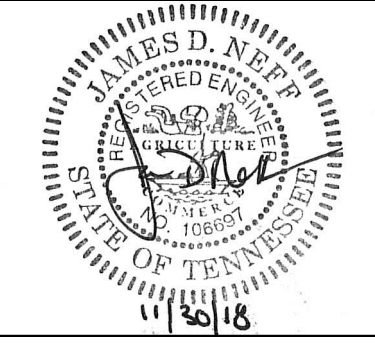
Source: VA DSWC

Figure 2

SO DISTURBED AREA STABILIZATION (WITH SOD) NTS



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## Storm Drain Outlet Protection - OP



### DEFINITION

Paved and/or riprapped channel treatment, placed below storm drain outlets.

### PURPOSE

To reduce storm water velocity and dissipate the energy of flow leaving a storm drain before it empties into receiving channels, and to armor erodible materials.

### CONDITIONS

This standard applies to all storm drain outlets, road culverts, paved channel outlets, etc., discharging into natural or constructed channels. Treatment will extend between the points where flow exits the storm drain and where flow velocity and/or flow energy from the design storm event is dissipated to the degree where there is minimal to no risk of erosion of the receiving channel.

### DESIGN CRITERIA

Structurally lined aprons at the outlets of pipes and paved channel sections should be designed by professionals familiar with storm water conveyance systems and according to the following criteria:

**Capacity:** The structure should be designed to handle the peak storm flow (Q), in cubic feet per second (cfs), from the 25-year, 24-hour frequency storm, or the design discharge of the water conveyance structure, whichever is greater.

**Tailwater Depth:** The design depth of the tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. Manning's Equation may be used to determine tailwater depth. If the tailwater depth is less than half the diameter of the outlet pipe, it should be classified as a low tailwater condition. If the tailwater depth is greater than half the pipe diameter, it should be classified as a high tailwater condition. Pipes which outlet onto flat areas

with no defined channel may be assumed to have a low tailwater condition.

**Materials:** The apron may be lined with riprap, grouted riprap, or concrete. The medium sized stone for riprap ( $D_{50}$ ) should be determined according to tailwater conditions described in Table 1. Maximum stone size is equal to 1.5 times the  $d_{50}$  value. The gradation, quality and placement of riprap should conform to the specifications in Riprap - RR.

**Apron Length ( $L_A$ ):** The apron length should be determined according to tailwater conditions described in Table 1.

**Apron Width ( $W_A$ ):** See Figure 1. If the pipe discharges directly into a well-defined channel, the apron should extend across the channel bottom and up the channel banks to an elevation one foot above the high tailwater depth or to the top of the bank (whichever is less). If the pipe discharges onto a flat area with no defined channel, the width of the apron should be determined as follows:

- The upstream end of the apron, adjacent to the pipe, should have a width three times the diameter of the outlet pipe.
- For a low tailwater conditions, the downstream end of the apron should have a width equal to the pipe diameter plus the length of the apron.
- For a high tailwater conditions, the downstream end should have a width equal to the pipe diameter plus .04 times the length of the apron.

**Bottom Grade:** The apron should be constructed with no slope along its length (0.0% grade). The invert elevation of the downstream end of the apron should be equal to the elevation of the invert of the receiving channel. There should be no turbulence at the end of the apron.

**Side Slope:** If the pipe discharges into a well-defined channel, the side slopes of the channel should not be steeper than 2:1.

**Alignment:** The apron should be located so that there are no bends in the horizontal alignment.

**Geotextile:** Geotextiles should be used as a separator between the graded stone, the soil base, and the abutments. The geotextile will prevent the migration of soil particles from the subgrade into the graded stone. All geotextile should be placed in direct contact with the subgrade without any voids. Refer to specification Geotextile - GE.

**Energy Dissipaters and Stilling Basins:** Structural controls, generally made from precast concrete or from pour-in-place concrete, should be used whenever concrete aprons are installed. The design of the energy dissipaters and stilling basins shown in Figure 2 are discussed in the Federal Highway Administration (FHWA) publication HEC- 14, Hydraulic Design of Energy Dissipaters for Culverts and Channels.

Stilling basins are used to convert flows from supercritical to subcritical flow rates by allowing a hydraulic jump to occur. The stilling basin allows a controlled hydraulic jump to occur within the structure over a wide range of flow conditions and depths. A professional engineer using hydraulic computations must design energy dissipaters and stilling basins. A primary concern for both energy dissipaters and stilling basins is whether sediment and trash can accumulate. TxDOT drawing standards include a riprap basin energy dissipater, based upon procedures in HEC- 14. The United States Bureau of Reclamation (USBR) also has developed many designs of such structures.

### CONSTRUCTION SPECIFICATIONS

- Ensure that the subgrade for the geotextile and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
- Geotextile - Install a geotextile liner to prevent soil movement through the

- openings in the riprap. Refer to specification Geotextile - GE.
- Geotextile must meet design requirements and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece of geotextile over the damaged area. All connecting joints should overlap a minimum of 1 foot. If the damage is extensive, replace the entire geotextile liner.
- Riprap may be placed by equipment, but take care to avoid damaging the geotextile.
- The minimum thickness of the riprap should be 1.5 times the maximum stone diameter, but not less than 6".
- The outlet structure must conform to the specified grading limits shown on the plans.
- Construct the apron on zero grade with no turbulence at the end. Make the top of the riprap at the

- downstream and level with the receiving area or slightly below it.
- Ensure that the apron is properly aligned with the receiving stream and, preferably, straight throughout its length.
- Immediately after construction, stabilize all disturbed areas with vegetation.
- Stone quality- Select stone for riprap from fieldstone or quarry stone. The stone should be hard, angular, and highly weather-resistant. The specific gravity of the individual stones should be at least 2.5. Refer to specification Riprap - RR.

### MAINTENANCE

Inspect riprap outlet structures after heavy rains to see if any erosion around or below the riprap has taken place or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.

## Riprap Outlet Protection Specifications

This table is intended to select two parameters for the design of riprap outlet protection, based upon outlet velocities that correspond with circular culverts flowing full. Flow values less than the lowest value for the culvert size usually indicate a full-flow velocity less than 5 feet per second, for which riprap is usually not necessary. Flow values more than the highest value for the culvert size usually indicates that a concrete stilling basin or energy dissipater structure is necessary.

Adjust values upward if the circular culvert is not flowing full based upon outlet conditions. For noncircular pipe, convert into an equivalent cross-sectional area of circular culvert to continue design.

| Riprap Aprons for Low Tailwater<br>(downstream flow depth < 0.5 x pipe diameter) |              |                |                 |   |                |                 |     |                |                 |     |                |                 |     |                |                 |  |
|--|--------------|----------------|-----------------|---|----------------|-----------------|-----|----------------|-----------------|-----|----------------|-----------------|-----|----------------|-----------------|--|
| Culvert Diameter   | Lowest value |                |                 | Intermediate values to interpolate from |                |                 |     |                |                 |     |                |                 |     | Highest value  |                 |  |
|  | Q            | L <sub>A</sub> | D <sub>50</sub> | Q                                       | L <sub>A</sub> | D <sub>50</sub> | Q   | L <sub>A</sub> | D <sub>50</sub> | Q   | L <sub>A</sub> | D <sub>50</sub> | Q   | L <sub>A</sub> | D <sub>50</sub> |  |
|  | Cfs          | ft             | in              | Cfs                                     | ft             | in              | Cfs | ft             | in              | Cfs | ft             | in              | Cfs | ft             | in              |  |
| 12"  | 4            | 7              | 2.5             | 8                                       | 10             | 3.5             | 9   | 13             | 6               | 12  | 16             | 7               | 14  | 17             | 8.5             |  |
| 15"  | 6.5          | 8              | 3               | 10                                      | 12             | 5               | 15  | 18             | 7               | 20  | 19             | 10              | 25  | 20             | 12              |  |
| 18"  | 10           | 9              | 3.5             | 15                                      | 14             | 5.5             | 20  | 17             | 7               | 30  | 22             | 11              | 40  | 25             | 14              |  |
| 21"  | 15           | 11             | 4               | 25                                      | 18             | 7               | 35  | 22             | 10              | 45  | 26             | 13              | 60  | 29             | 18              |  |
| 24"  | 21           | 13             | 5               | 35                                      | 20             | 8.5             | 50  | 26             | 12              | 65  | 30             | 16              | 80  | 33             | 19              |  |
| 27"  | 27           | 14             | 5.5             | 50                                      | 24             | 9.5             | 70  | 29             | 14              | 90  | 34             | 18              | 110 | 37             | 22              |  |
| 30"  | 36           | 16             | 6               | 60                                      | 25             | 9.5             | 90  | 33             | 15.5            | 120 | 38             | 20              | 140 | 41             | 24              |  |
| 36"  | 58           | 20             | 7               | 100                                     | 32             | 13              | 140 | 40             | 18              | 180 | 45             | 23              | 220 | 50             | 28              |  |
| 42"  | 82           | 22             | 8.5             | 120                                     | 32             | 12              | 180 | 39             | 17              | 200 | 45             | 20              | 260 | 52             | 26              |  |
| 48"  | 100          | 26             | 10              | 170                                     | 37             | 14              | 220 | 48             | 19              | 270 | 54             | 23              | 320 | 64             | 37              |  |

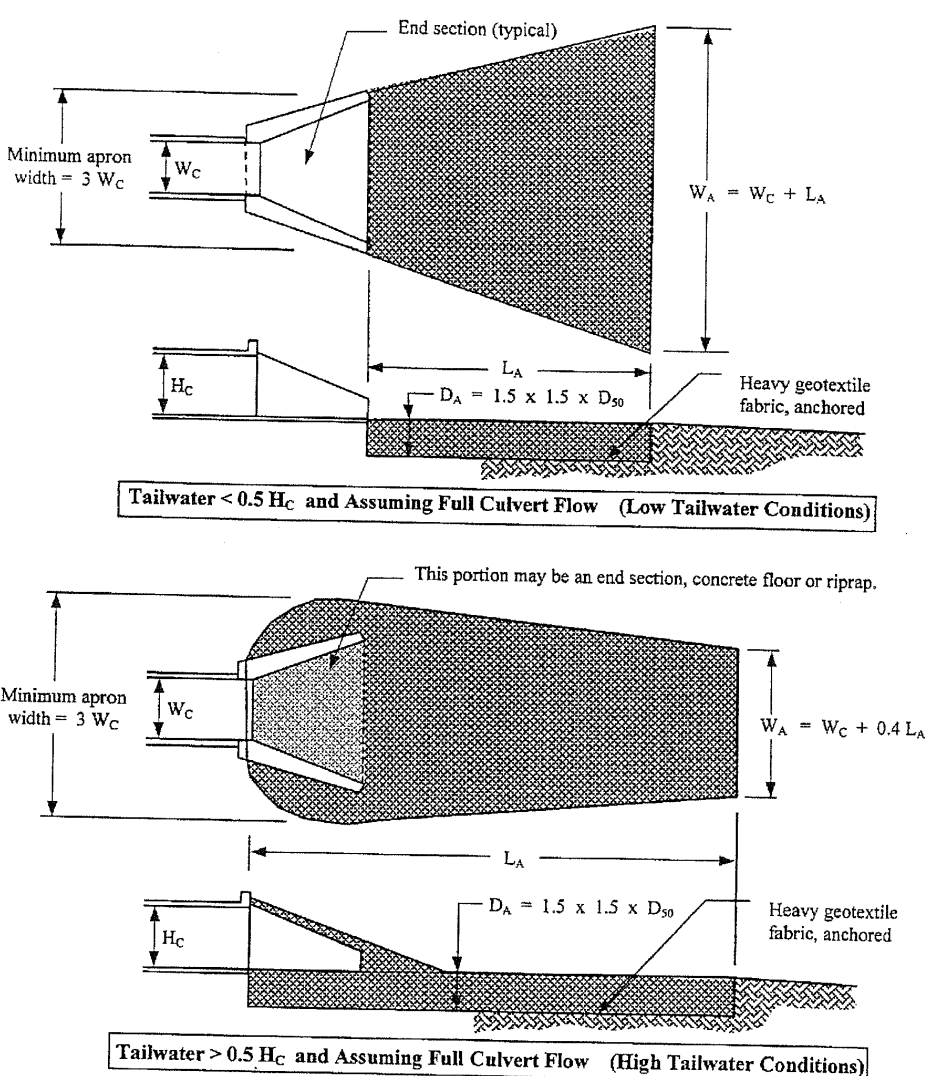
| Riprap Aprons for High Tailwater<br>(downstream flow depth > 0.5 x pipe diameter) |              |                |                 |   |                |                 |     |                |                 |     |                |                 |     |                |                 |  |
|---|--------------|----------------|-----------------|---|----------------|-----------------|-----|----------------|-----------------|-----|----------------|-----------------|-----|----------------|-----------------|--|
| Culvert Diameter  | Lowest value |                |                 | Intermediate values to interpolate from |                |                 |     |                |                 |     |                |                 |     | Highest value  |                 |  |
|   | Q            | L <sub>A</sub> | D <sub>50</sub> | Q                                       | L <sub>A</sub> | D <sub>50</sub> | Q   | L <sub>A</sub> | D <sub>50</sub> | Q   | L <sub>A</sub> | D <sub>50</sub> | Q   | L <sub>A</sub> | D <sub>50</sub> |  |
|   | Cfs          | ft             | in              | Cfs                                     | ft             | in              | Cfs | ft             | in              | Cfs | ft             | in              | Cfs | ft             | in              |  |
| 12"   | 4            | 3              | 2               | 6                                       | 16             | 2.5             | 9   | 28             | 4.5             | 12  | 36             | 7               | 14  | 40             | 8               |  |
| 15"   | 7            | 8              | 2               | 10                                      | 20             | 2.5             | 15  | 34             | 5               | 20  | 42             | 7.5             | 25  | 50             | 10              |  |
| 18"   | 10           | 8              | 2               | 15                                      | 22             | 3               | 20  | 34             | 5               | 30  | 50             | 9               | 40  | 60             | 11              |  |
| 21"   | 15           | 8              | 2               | 25                                      | 32             | 4.5             | 35  | 48             | 7               | 45  | 58             | 11              | 60  | 72             | 14              |  |
| 24"   | 20           | 9              | 2               | 35                                      | 38             | 5               | 50  | 55             | 8.5             | 65  | 68             | 12              | 80  | 80             | 15              |  |
| 27"   | 27           | 10             | 2               | 50                                      | 41             | 6               | 70  | 58             | 10              | 90  | 70             | 14              | 110 | 82             | 17              |  |
| 30"   | 36           | 11             | 2               | 60                                      | 42             | 6               | 90  | 64             | 11              | 120 | 80             | 15              | 140 | 90             | 18              |  |
| 36"   | 58           | 13             | 2.5             | 100                                     | 60             | 7               | 140 | 85             | 13              | 180 | 104            | 18              | 220 | 120            | 23              |  |
| 42"   | 82           | 15             | 2.5             | 120                                     | 50             | 6               | 180 | 75             | 10              | 200 | 136            | 14              | 260 | 120            | 19              |  |
| 48"   | 100          | 20             | 2.5             | 170                                     | 58             | 7               | 220 | 85             | 12              | 270 | 105            | 16              | 320 | 120            | 20              |  |

Table 1

Source: Knoxville Engineering Department

OP - 4

## Riprap Outlet Protection



NOT TO SCALE

Figure 1

Source: Knoxville Engineering Department

OP - 5

## Various Energy Dissipaters and Stilling Basins

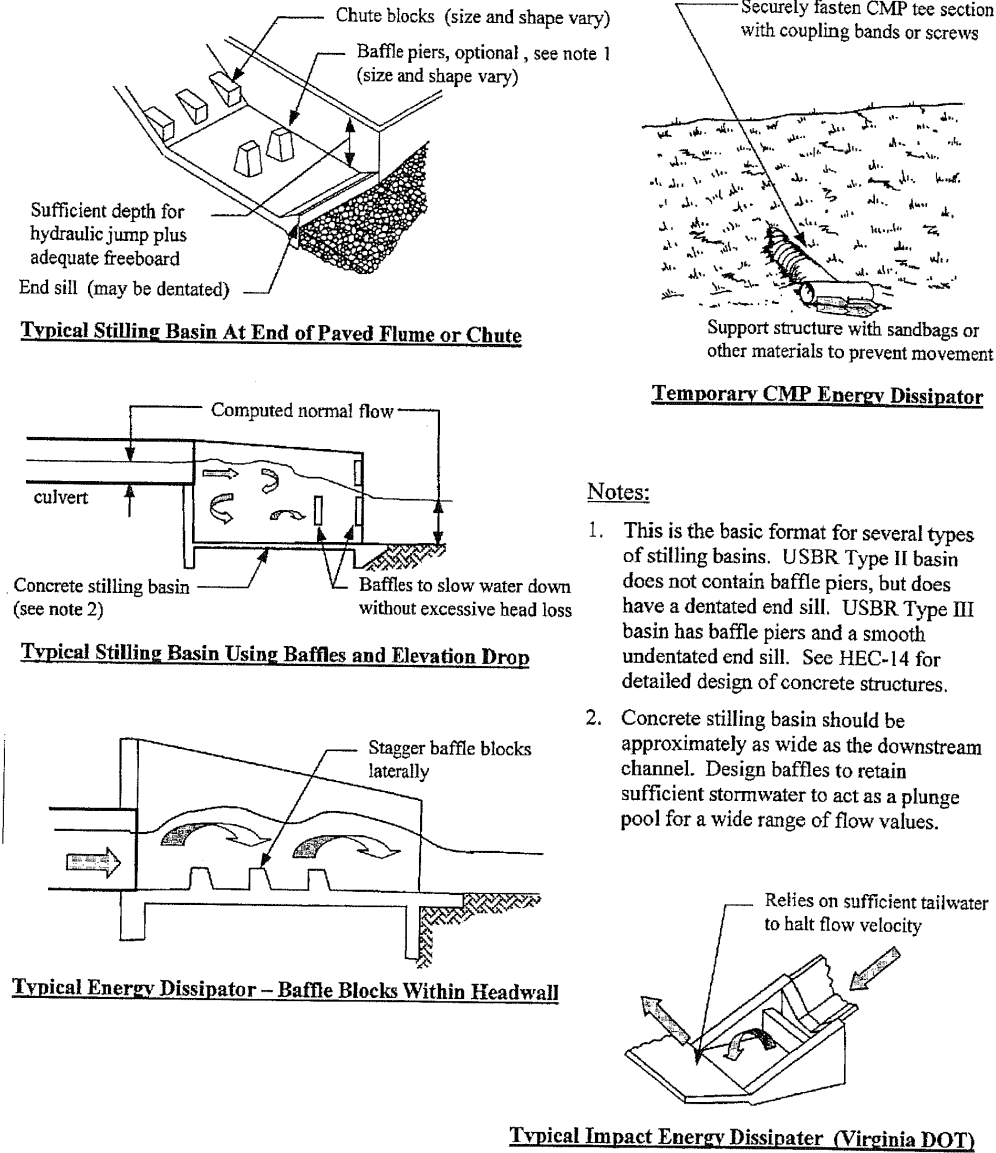


Figure 2

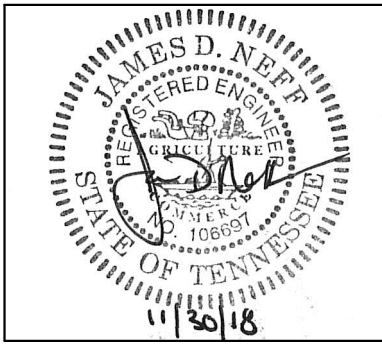
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OP - 6



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LANDSCAPE NOTES:

DELIVERY, STORAGE AND HANDLING

- A. DELIVER MATERIALS IN SUCH A MANNER AS TO NOT DAMAGE OR DECREASE THE HEALTH AND VIGOR OF THE PLANT MATERIALS.
- B. STORE MATERIALS AWAY FROM DETRIMENTAL ELEMENTS. COORDINATE WITH GENERAL CONTRACTOR TO SECURE A SAFE STAGING AREA.
- C. HANDLE, LOAD, UNLOAD, AND TRANSPORT MATERIALS CAREFULLY TO AVOID DAMAGE.
- D. MAINTAIN AND PROTECT PLANT MATERIALS AS NECESSARY TO INSURE HEALTH AND VIGOR.

GUARANTEE

A. GUARANTEE PLANT MATERIALS AND LAWN AREAS FOR YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION. CONTRACTOR SHALL REPLACE PLANTS AND LAWNS, THAT FAIL TO GROW PROPERLY WITH PLANTS AS ORIGINALLY SPECIFIED AT THE EARLIEST PRACTICAL DATE FOLLOWING PLANT FAILURE, WITHOUT ADDITIONAL CHARGES TO THE OWNER. REPLACEMENT MATERIALS WILL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF REPLACEMENT. THE CONTRACTOR SHALL NOT BE RESPONSIBLE FOR REPLACING PLANTS WHICH ARE DAMAGED BY ABUSE OR IMPROPER MAINTENANCE BY OWNER, OR BY ACTS OF GOD OCCURRING AFTER ACCEPTANCE.

MATERIAL FOR STAKING

- A. STAKES FOR SUPPORTING TREES SHALL BE SOUND TIMBER, STRAIGHT, SIZED AS SHOWN IN PLANTING DETAILS AND OF SUFFICIENT LENGTH TO ADEQUATELY SUPPORT THE PLANT.
- B. DEADMEN OR STAKES FOR ANCHORING STRAPS IN THE GROUND SHALL BE OF SIZE MATERIAL, AND STRENGTH ADEQUATE TO HOLD STRAPS TOUT AND MAINTAIN TREE FIRMLY IN AN UPRIGHT POSITION.
- GUYING, STAKING AND MULCHING

- A. USE ARBORTIE OR EQUIVALENT FOR ANY NEEDED STAKING TO ELIMINATE USE OF WIRE AND HOSE. STRAPS SHALL BE WIDE, SOFT, FLEXIBLE MATERIAL MANUFACTURED FOR THE PURPOSE OF TREE ANCHORING SUCH AS NOVEN POLYPROPYLENE WEBBING. ANY STAKING MATERIAL IS TO BE REMOVED AFTER THE FIRST GROWING SEASON.
- A. STAKE TREES TWO-INCH CALIPER AND OVER. SPACE THREE STRAPS EQUALLY ABOUT EACH TREE, ATTACHED AT APPROXIMATELY TWO-FIFTHS UP THE TRUNK. STRAPS SHOULD BE AT A 45-DEGREE ANGLE AND ANCHORED IN THE GROUND WITH STAKES. THESE STRAPS SHALL BE EQUALLY TOUT.
- B. STAKE TREES LESS THAN TWO INCHES CALIPER WITH TWO OR THREE WOOD STAKES DRIVEN TWO FEET INTO THE GROUND WITH THE PORTION EXTENDING ABOVE THE GROUND APPROXIMATELY ONE-HALF OF THE TRUNK HEIGHT. STAKE ONE FOOT FROM TRUNK, FASTENED AT APPROXIMATELY TWO-FIFTHS OF TRUNK HEIGHT.
- C. PRIOR TO INSTALLING MULCH MATERIAL, ALL PLANTING BEDS SHALL BE COVERED WITH LANDSCAPE FABRIC IN AN EFFORT TO REDUCE WEEDS. LANDSCAPE FABRIC SHOULD BE BREATHABLE AND ALLOW AIR, WATER AND NUTRIENTS TO PENETRATE THE SOIL. TWO TO THREE INCHES OF MULCH MATERIAL SHALL BE PLACED ON TOP OF THE LANDSCAPE FABRIC.

- D. MULCH ALL PLANTING BEDS AND OTHER AREAS DESIGNATED TO BE MULCHED (WITH THE EXCEPTION OF ANY ANNUAL, SEASONAL COLOR OR PERENNIAL BEDS) WITH TWO TO THREE INCHES OF MULCH MATERIAL. IF RIVER ROCKS ARE USED, ROCKS SHALL BE BETWEEN 1" AND 3" IN SIZE. CONTRACTOR TO PROVIDE A MULCH MATERIAL SAMPLE TO OWNER PRIOR TO INSTALLATION FOR COLOR AND SIZE APPROVAL. ANY LANDSCAPE BEDS NOTED AS ANNUAL, SEASONAL COLOR AND/OR PERENNIAL BEDS SHALL BE MULCHED WITH SMALL SIZED PEA GRAVEL SUCH AS INDIANA PEA GRAVEL. CONTRACTOR TO PROVIDE A MATERIAL SAMPLE TO OWNER PRIOR TO INSTALLATION FOR COLOR AND SIZE APPROVAL. IF RIVER ROCKS ARE USED, ALL RIVER ROCKS SHALL BE RINSED CLEAN ON SITE PRIOR TO INSTALLATION IN PLANTING BEDS.

EXCAVATION FOR PLANTING TREES AND SHRUBS

- A. CIRCULAR PLANT PITS WITH VERTICAL SIDES SHALL BE DUG BY HAND OR MACHINE METHODS FOR PLANTING OF TREES AND SHRUBS.
- B. TREE PIT DIAMETERS SHALL BE A MINIMUM OF TWO FEET GREATER THAN THE SPREAD OF THE ROOT MASS.
- C. SHRUB PIT DIAMETER SHALL BE A MINIMUM OF ONE FOOT GREATER THAN THE SPREAD OF THE ROOT MASS.
- D. CONTRACTOR SHALL TEST EXCAVATED PLANT PITS TO SATISFY THAT SUFFICIENT DRAINAGE IS PRESENT FOR PROPER PLANT SURVIVAL.
- E. IF THE INDIVIDUAL PITS ARE ARRANGED IN A GROUP, THE AREA BETWEEN PITS SHALL BE FILLED TO THE REQUIRED GRADE WITH EXISTING SOIL AND MULCHED WITH MULCH MATERIAL THREE INCHES DEEP. PLANT BEDS SHALL BE NEATLY EDGED AND KEPT FREE OF WEEDS UNTIL THE WORK IS ACCEPTED.

TOPSOIL

A. TOPSOIL SHALL BE FERTILE, FRIABLE, SANDY LOAM, AND SHALL BE NATURAL SURFACE SOIL OBTAINED FROM WELL DRAINED AREAS. TOPSOIL SHALL BE CHARACTERISTIC OF REPRESENTATIVE SOILS IN THE PROJECT VICINITY THAT PRODUCE HEAVY GROWTHS OF CROPS, GRASS OR OTHER VEGETATION. TOPSOIL SHALL BE FREE OF SUBSOIL, BRUSH, ORGANIC LITTER, OBJECTIONABLE WEEDS, CLAY, CLOTS, STUMPS, ROOTS OR OTHER MATERIAL HARMFUL TO PLANT GROWTH OR HINDRANCE TO PLANTING OR MAINTENANCE OPERATIONS. SHOULD REGENERATIVE MATERIALS BE PRESENT IN THE SOIL, CONTRACTOR SHALL ERADICATE AND REMOVE SUCH GROWTH, BOTH SURFACE AND ROOT, WHICH MAY APPEAR IN THE IMPORTED MATERIAL WITHIN ONE YEAR FOLLOWING ACCEPTANCE OF THE WORK. TOPSOIL SHALL NOT BE HANDLED IN A FROZEN OR MUDDY CONDITION. THE ACIDITY RANGE SHALL BE BETWEEN 5.0 AND 7.0 INCLUSIVE.

FERTILIZER

- A. FERTILIZER FOR ALL TREES, SHRUBS AND GROUNDCOVERS SHALL BE STA GREEN NURSERY SPECIAL OR EQUIVALENT AND DELIVERED TO THE SITE IN UNOPENED CONTAINERS.
- B. FERTILIZER FOR GRASS SHALL BE STA-GREEN FERTILIZER OR EQUIVALENT CONTAINING THE FOLLOWING PERCENTAGES BY WEIGHT:
- 10% NITROGEN  
24% PHOSPHOROUS  
10% POTASH
- FERTILIZER SHALL BE UNIFORM IN COMPOSITION, DRY AND FREE FLOWING, AND SHALL LIST THE MANUFACTURER'S GUARANTEED ANALYSIS. FERTILIZER SHALL NOT HAVE BEEN EXPOSED TO WEATHER PRIOR TO DELIVERY TO THE SITE. AFTER DELIVERY UNTIL USED, IT SHALL BE COMPLETELY PROTECTED AT ALL TIMES. IT SHALL NOT BE STORED IN CONTACT WITH THE THE GROUND.

LANDSCAPE BED EDGING

A. ALL BEDS MULCHED WITH RIVER ROCK SHALL BE EDGED WHEN ADJACENT TO LAWN AREAS. EDGING SHALL BE ALUMINUM AND BLACK IN COLOR, PERMALOC ALUMINUM ALLOY BLACK ANODIZED EDGING OR EQUIVALENT.

DRAINAGE TEST

- A. REPRESENTATIVE TREE AND SHRUB PITS FROM EACH PLANTING AREA SHALL BE FILLED WITH WATER. IF PERCOLATION IS LESS THAN 100 TWELVE-INCH AUGER TO A DEPTH OF FOUR FEET BELOW THE BOTTOM OF THE TREE PIT, RETEST THE PIT. IN CASE DRAINAGE IS STILL UNSATISFACTORY NOTIFY THE LANDSCAPE ARCHITECT, IN WRITING OF THE CONDITION BEFORE PLANTING TREES IN THE QUESTIONABLE AREAS. CONTRACTOR IS FULLY RESPONSIBLE FOR THE WARRANTY OF PLANTINGS.
- B. GROUNDCOVER BEDS SHALL ALSO BE SPOT TESTED FOR DRAINAGE.

C. DISPOSE OF SUBSOIL REMOVED FROM LANDSCAPE EXCAVATIONS. DO NOT MIX WITH THE PLANTING SOIL. DO NOT USE AS BACKFILL OR USE TO CONSTRUCT SAUCERS AROUND PITS.

SETTING TREES, SHRUBS AND GROUNDCOVERS

- A. BALLED AND CONTAINER PLANTS SHALL BE PLACED FIRMLY UPON SCARIFIED SUB-GRADE AND BACKFILLED WITH PLANTING SOIL MIXTURE. REMOVE ALL WIRE, CARDS AND BURLAP FROM TOP OF ROOT BALL. HAND TAMP CAREFULLY AROUND AND UNDER BALL TO FILL ALL VOIDS. WATER DURING BACKFILLING. FORM SAUCER FROM PLANTING SOIL MIXTURE IN ORDER TO RETAIN WATER.
- B. GENTLY LOOSEN OUTER ROOTS OF CONTAINER GROWN PLANTS TO ENCOURAGE OUTWARD GROWTH.
- C. FERTILIZER SHALL BE THOROUGHLY MIXED AND SOAKED INTO THE TOP TWO INCHES OF SOIL FOR ALL PLANT PITS.

TREE TRANSPORTATION

A. THE CONTRACTOR SHALL BE RESPONSIBLE NOT ONLY FOR THE SAFE TRANSPORTATION OF THE PLANTS TO THE SITE BUT ALSO THEIR CONDITION UPON ARRIVAL. TREES WITH ABRASIONS OF THE BARK, SUNSCALDS, FRESH CUTS OR BREAKS OF LIMBS WHICH HAVE NOT COMPLETELY CALLOUSED WILL BE REJECTED. TREES WHICH HAVE BEEN DAMAGED DURING TRANSIT WILL BE REPLACED BY CONTRACTOR AT NO ADDITIONAL COST. ALL PLANT UNIT COSTS WILL REFLECT ALL THE ABOVE LISTED SPECIFICATIONS.

PRUNING

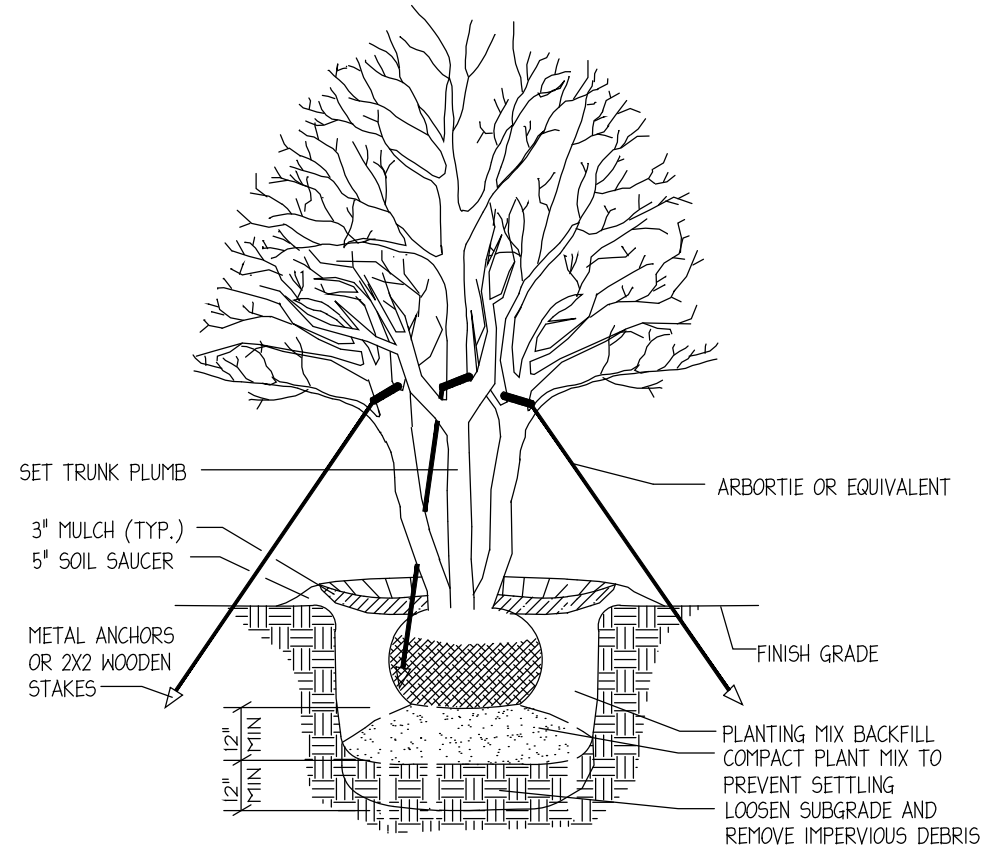
- A. DECIDUOUS TREES AND SHRUBS SHALL HAVE DEAD, BROKEN AND CROWDED WOOD PRUNED TO COMPENSATE FOR THE LOSS OF ROOTS IN TRANSPLANTING. REQUESTED AND REQUIRED ADDITIONAL PRUNING MAY BE NECESSARY AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
- B. EVERGREEN TREES AND SHRUBS SHALL BE PRUNED ONLY TO THINK OUT HEAVY GROWTH.
- C. CUTS OVER 3/4 INCH IN DIAMETER SHALL BE PAINTED WITH TREE DRESSING PAINT. NO PAINT CONTAINING LEAD SHALL BE PERMITTED.

PREPARATION OF GRASS AREAS

- A. FINE GRADE ALL GRASS AREAS TO FINISH GRADE. ALL AREAS SHALL HAVE SMOOTH AND CONTINUAL GRADE BETWEEN THE EXISTING AND FIXED CONTROLS SUCH AS WALKS AND CURBS. ROLL, SCARIFY, RAKE AND LEVEL AS NECESSARY TO OBTAIN TRUE, EVEN AND FIRM LAWN SURFACES. ALL FINISHED GRADES SHALL MEET APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE BEFORE GRASSING OPERATIONS BEGIN.
- B. AREAS TO RECEIVE GRASS
- I. TYPE OF TURF TO BE APPROVED BY OWNER.
- II. CONTRACTOR TO BE RESPONSIBLE FOR FIELD VERIFICATION OF SOD AREAS TO CONFIRM SQUARE FOOTAGES.
- III. GRADE WILL BE BROUGHT TO THE LEVEL OF +/- 1" OF THE FINISHED GRADE BY THE GENERAL CONTRACTOR. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR THE TOP +/- 1" OF SOIL WORK. THIS IS TO INCLUDE ALL TOPSOIL HAULING AND PLACEMENT; SPREADING; DEBRIS REMOVAL AND ANY GRADING REQUIRED TO BRING THE FINISHED TOPSOIL GRADE TO THE PROPER LEVEL FOR GRASS.
- IV. THOROUGHLY TILL EXISTING SOIL TO A MINIMUM DEPTH OF FOUR INCHES BY RUNNING TILLING DEVICE TWO DIRECTIONS AT RIGHT ANGLES OVER THE ENTIRE SURFACE TO BE GRASSED. FINE GRADE TO ACHIEVE UNIFORMITY AND DRAINAGE.
- V. SPREAD SPECIFIED FERTILIZER AS PER MANUFACTURER'S RECOMMENDATIONS.
- VI. WORK SOIL TO A UNIFORM GRADE SO THAT ALL AREAS HAVE POSITIVE DRAINAGE AWAY FROM DRIVES, BUILDINGS AND LANDSCAPED AREAS.
- VII. CONTRACTOR TO COORDINATE WITH OWNER FOR TURF SELECTION PRIOR TO INSTALLATION.

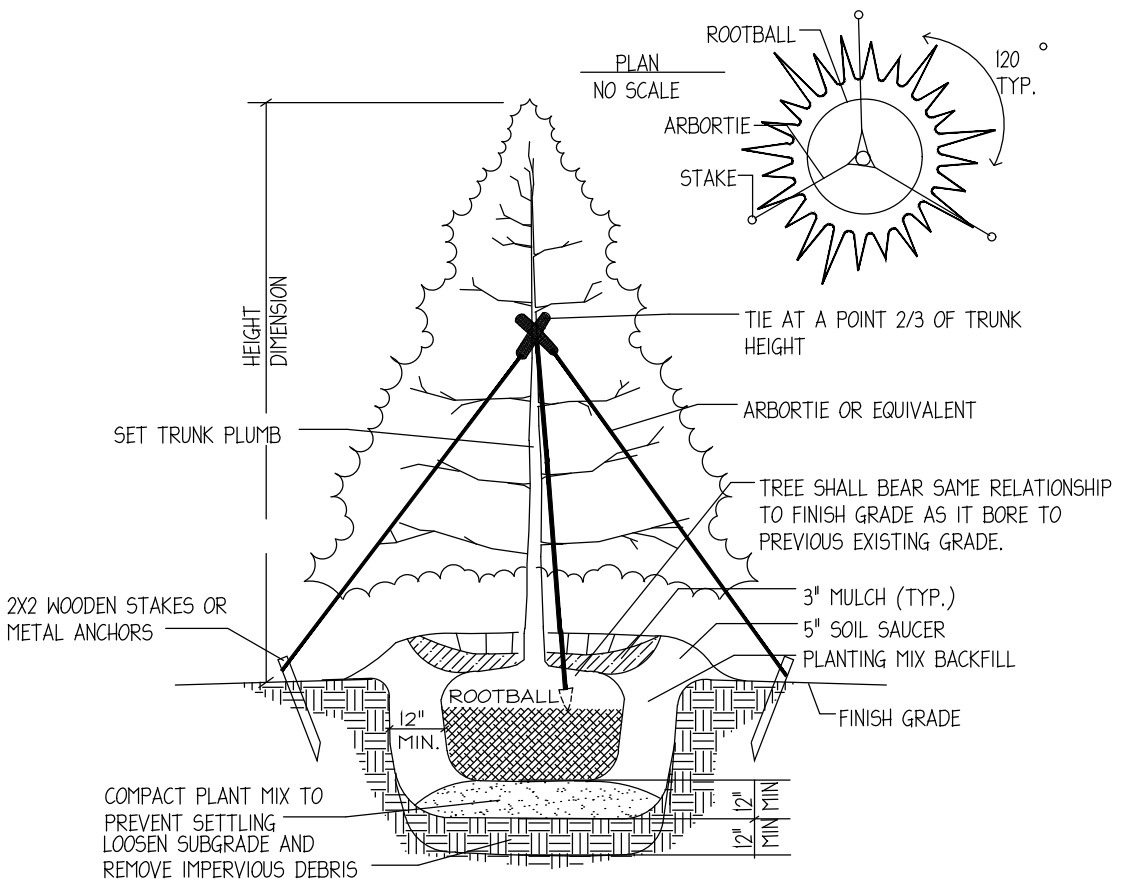
CLEANUP & PROTECTION

- A. DURING PLANTING OPERATIONS KEEP PROJECT SITE CLEAN AND ORDERLY.
- B. UPON COMPLETION OF WORK, CLEAR GROUNDS OF DEBRIS, SUPERFLUOUS MATERIALS AND ALL EQUIPMENT. REMOVE FROM SITE TO SATISFACTION OF THE LANDSCAPE ARCHITECT AND OWNER.
- C. PROTECT ALL WORK AND MATERIALS FROM DAMAGE DUE TO IRRIGATION OPERATIONS AND OPERATIONS BY OTHER CONTRACTORS, TRADES, AND TRESPASSERS. MAINTAIN PROTECTION UNTIL DATE OF SUBSTANTIAL COMPLETION.
- D. CONTRACTOR IS RESPONSIBLE FOR THEFT OF EQUIPMENT AND MATERIAL AT THE JOB SITE BEFORE, DURING AND AFTER INSTALLATION, UNTIL DATE OF SUBSTANTIAL COMPLETION OF THE WORK IN TOTAL.



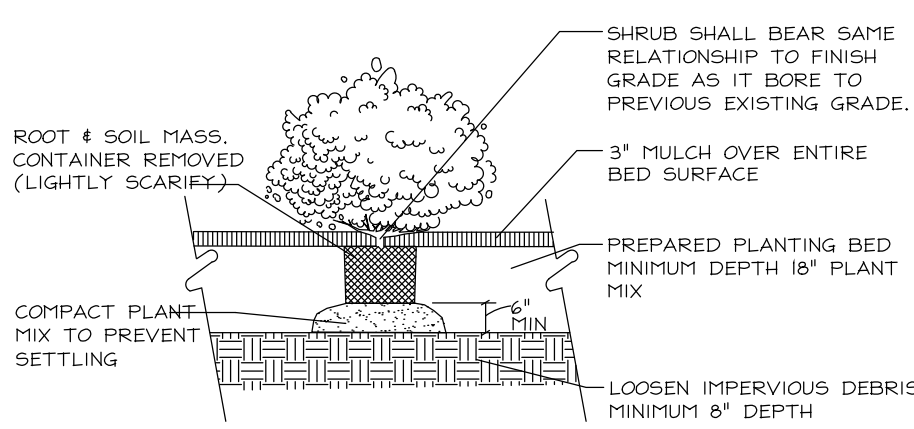
NOTE: 1. STAKING FOR TREES 2" CAL. EA. TRUNK OR SMALLER. TREES LARGER THAN 2" CAL. TO BE GUYED.

1 DETAIL MULTI-TRUNKED TREE PLANTING  
NOT TO SCALE  
NOTE: ALL TREES MUST BE PLANTED AT LEAST 10' FROM ALL UTILITY LINES

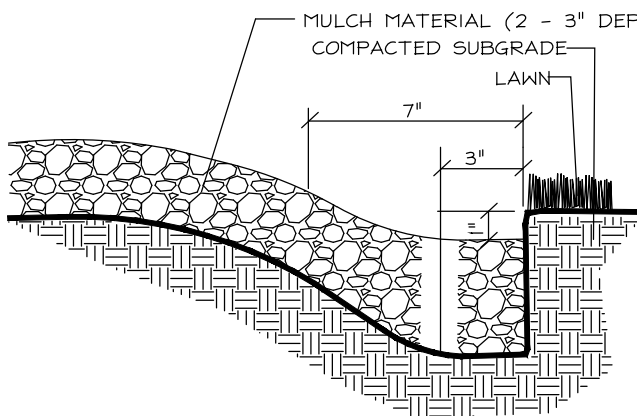


NOTES: 1. EVERGREEN TREES 2" CAL OR SMALLER TO BE STAKED. 2. PROVIDE WATER CRYSTALS PER MANUFACTURER'S RECOMMENDATIONS FOR FINE TREES.

3 DETAIL EVERGREEN TREE PLANTING  
NOT TO SCALE  
NOTE: ALL TREES MUST BE PLANTED AT LEAST 10' FROM ALL UTILITY LINES

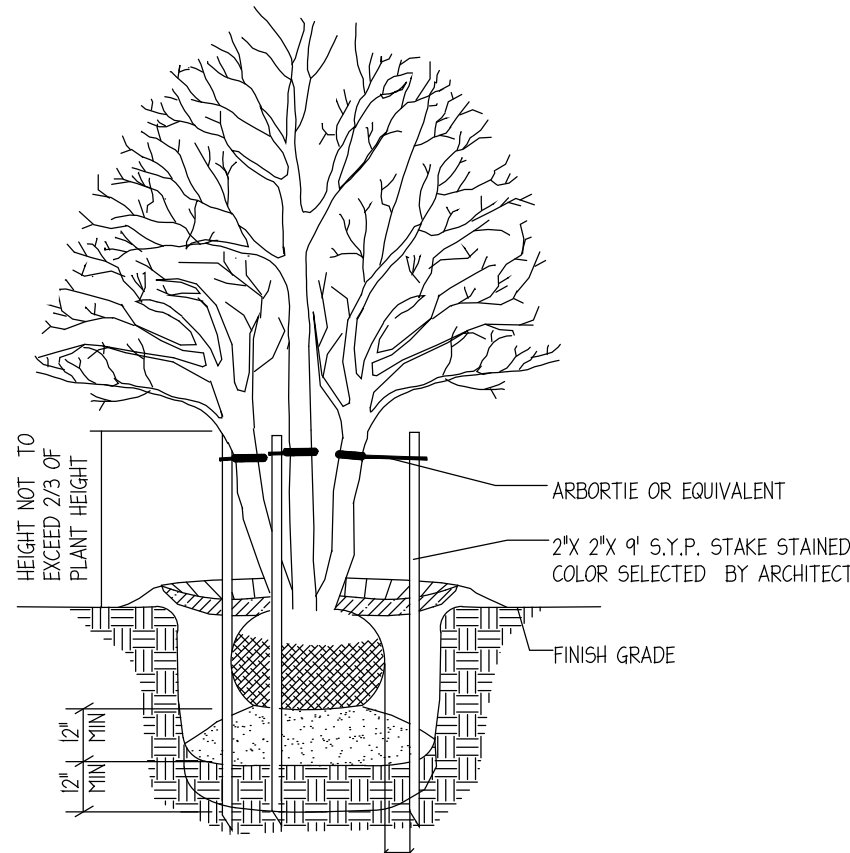


5 DETAIL TYPICAL FOR ALL PLANTS  
SPACED LESS THAN 36" O.C.  
NOT TO SCALE



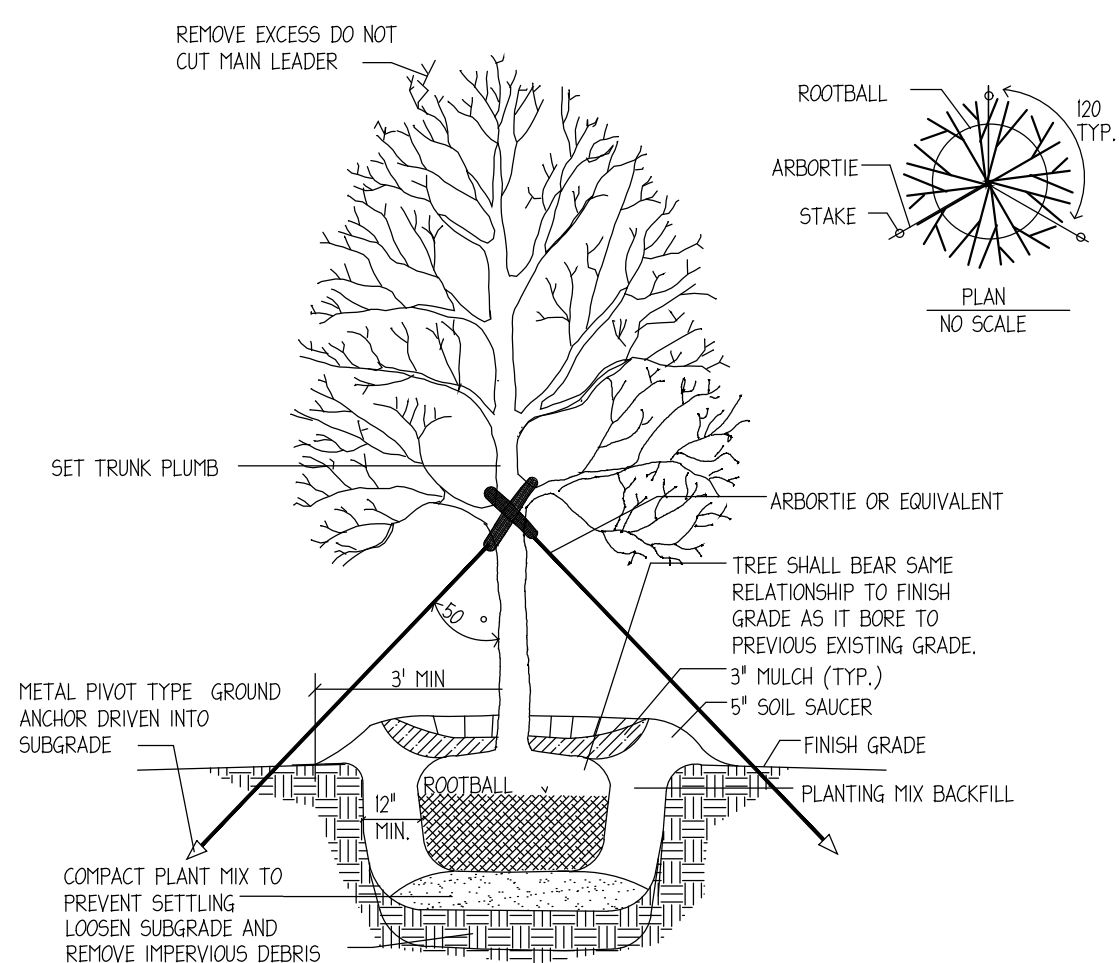
NOTE: TRENCH EDGE TO BE LOCATED BETWEEN PLANTING BEDS AND ALL LAWN AREAS.

7 TRENCH EDGER DETAIL FOR ALL BEDS  
NOT TO SCALE

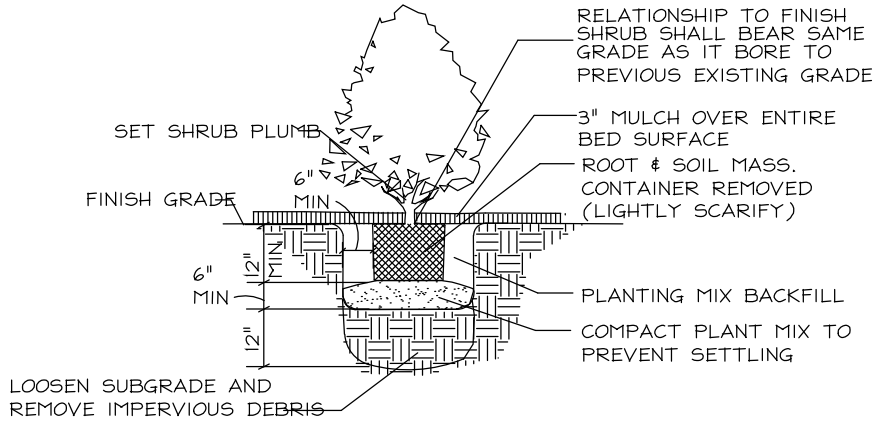


NOTE: 1. STAKING FOR TREES 2" CAL. EA. TRUNK OR SMALLER. TREES LARGER THAN 2" CAL. TO BE GUYED.

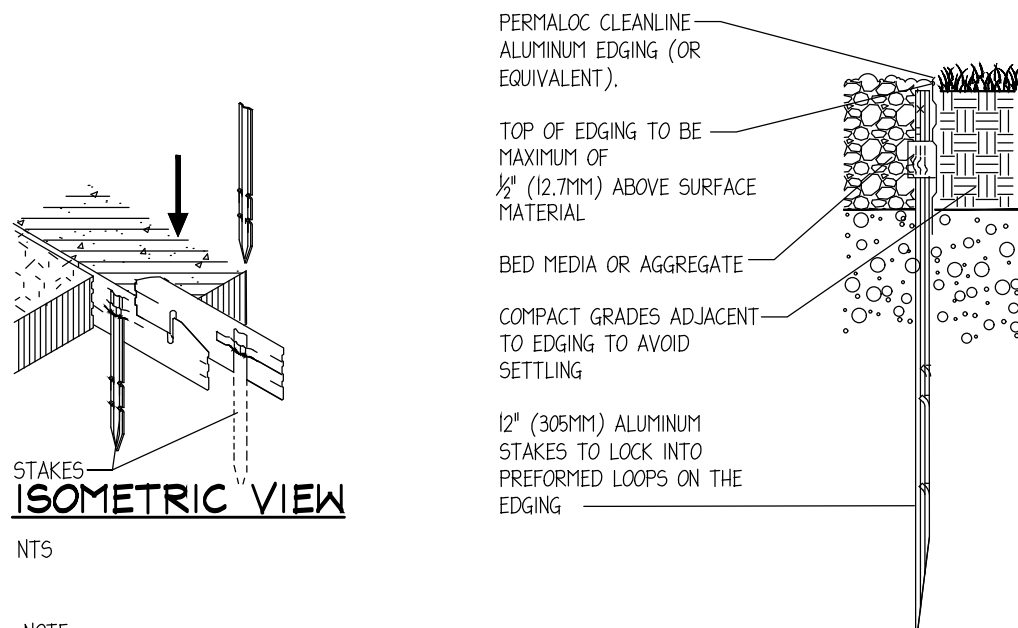
2 DETAIL MULTI-TRUNKED TREE STAKING  
NOT TO SCALE  
NOTE: ALL TREES MUST BE PLANTED AT LEAST 10' FROM ALL UTILITY LINES



4 DETAIL TYPICAL TREE PLANTING AND GUYING  
NOT TO SCALE



6 DETAIL TYPICAL CONTAINERIZED SHRUB PLANTING  
NOT TO SCALE



NOTES:

- 1) ALL ALUMINUM EDGING SHALL BE BLACK IN COLOR. PERMALOC ALUMINUM ALLOY BLACK ANODIZED EDGING OR EQUIVALENT.
- 2) INSTALL EDGING SO THAT STAKES WILL BE ON INSIDE OF PLANTING BED.
- 3) BOTTOM OF EDGING SHALL BE BURIED A MINIMUM OF 1" BELOW FINISH GRADE.
- 3) TOP OF MULCH MATERIAL SHALL BE 1/2" LOWER THAN TOP OF EDGING.

8 ALUMINUM LANDSCAPE BED EDGING  
NOT TO SCALE

CLIENT:

PANDA EXPRESS, INC.  
1683 WALNUT GROVE AVENUE  
ROSEMEAD, CA 91770  
PHONE: 626-799-0898

REVISION HISTORY

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|   |   |   |   |   |   |   |   |   |    |

THE CIVIL ENGINEER REGULARLY UPDATES ELECTRONIC FILES DURING THE DEVELOPMENT OF A PROJECT. AS A RESULT, THE DATA INCLUDED IN ANY OLD FILE OR DRAWING PRIOR TO ITS FINAL RELEASE DOES NOT NECESSARILY REFLECT THE COMPLETE SCOPE OR CONTENT AS DEFINED IN THE CONTRACT. THE CONTENTS IN THESE FILES MAY THEREFORE BE PRELIMINARY, INCOMPLETE, WORK IN PROGRESS, AND SUBJECT TO CHANGE. FURTHERMORE, THE INFORMATION CONTAINED HEREIN IS THE SOLE PROPERTY OF THE CIVIL ENGINEER. THE ORIGINAL LEGAL REPRESENTED HERE BY THIS INFORMATION SHALL NOT BE USED, ALTERED, OR REPRODUCED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT OF THE CIVIL ENGINEER. THESE PLANS ARE SUBJECT TO FEDERAL COPYRIGHT LAWS AND USE OF SAME WITHOUT EXPRESSED WRITTEN PERMISSION OF THE CIVIL ENGINEER IS PROHIBITED.

|            |                |
|------------|----------------|
| PROJ #     | 180050         |
| DWG NAME   | 180050 L01.DWG |
| ISSUE DATE | 11/09/2018     |
| PROJ. TGR. | JLC            |

|                              |
|------------------------------|
| LANDSCAPE<br>NOTES & DETAILS |
| L01.1<br>SHEET NUMBER        |



| Schedule |       |          |                                      |  |      |              |                           |                 |                   |         |
|----------|-------|----------|--------------------------------------|--|------|--------------|---------------------------|-----------------|-------------------|---------|
| Symbol   | Label | Quantity | Catalog Number                       | Description                            | Lamp | Number Lamps | Filename                  | Lumens Per Lamp | Light Loss Factor | Wattage |
|          | A     | 4        | VILLA LIGHTING-XGBM-FT-LED-HO-NW-HSS | CONTACT RYAN ZINSELMEIER- 314-531-2600 |      | 1            | XGBM-FT-LED-HO-NW-HSS.ies | 17194           | 1                 | 288.8   |
|          | B     | 1        | VILLA LIGHTING-XGBM-3-LED-HO-NW-HSS  | CONTACT RYAN ZINSELMEIER- 314-531-2600 |      | 1            | XGBM-3-LED-HO-NW-HSS.ies  | 13942           | 1                 | 288.3   |
|          | D     | 2        | VILLA LIGHTING-XGBM-FT-LED-HO-NW-HSS | CONTACT RYAN ZINSELMEIER- 314-531-2600 |      | 1            | XGBM-FT-LED-HO-NW-HSS.ies | 17194           | 1                 | 577.6   |

| Statistics                  |        |        |         |        |         |         |
|-----------------------------|--------|--------|---------|--------|---------|---------|
| Description                 | Symbol | Avg    | Max     | Min    | Max/Min | Avg/Min |
| CALC SUMMARY- PAVED SURFACE | +      | 4.3 fc | 10.6 fc | 0.9 fc | 11.8:1  | 4.8:1   |
| CALC SUMMARY- PROPERTY LINE | +      | 0.7 fc | 1.8 fc  | 0.0 fc | N/A     | N/A     |
| TRASH ENCLOSURE             | +      | 6.1 fc | 9.7 fc  | 1.9 fc | 5.1:1   | 3.2:1   |

- Note
1. Mounting height of 22' (20'pole)
  2. Calculations taken at ground level.
  3. Contact Villa Lighting- Ryan Zinselmeier-ryan.zinselmeier@villalighting.com- 314.531-2600



PANDA EXPRESS  
NASHVILLE, TN

Designer  
RYAN  
ZINSELMEIER  
11/5/2018  
Scale  
Drawing No.  
Summary



PANDA EXPRESS  
NASHVILLE, TENNESSEE  
CAST-IN-PLACE CONCRETE RETAINING WALL  
NOVEMBER 16, 2018

NOTES FOR THE CONSTRUCTION OF THE CAST-IN-PLACE CONCRETE RETAINING WALL

1. ALL CONCRETE WORK SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE STANDARD 318-11 AND IBC 2012.
2. SOIL BEARING CAPACITY SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.
3. BACKFILL AROUND THE CAST-IN-PLACE CONCRETE RETAINING WALL SHALL BE PLACED IN 8" LIFTS AT 95% STANDARD PROCTOR COMPACTION.
4. ALL STEEL SHALL BE ASTM A615 GRADE 60 REINFORCEMENT.
5. UNLESS OTHERWISE NOTED, ALL REINFORCING LAP SPLICES SHALL BE PER ACI STANDARDS CLASS B SPLICES.
6. PRIOR TO PLACING CONCRETE, ALL REINFORCING STEEL SHALL BE FREE OF RUST SCALE OR ANY FOREIGN MATERIAL.
7. CONCRETE TO BE 3000 PSI WITH SLUMP OF 4 TO 6 INCHES.
8. VERTICAL CONTROL JOINTS SHALL BE MADE WITH CAMFER EDGES AT 25 FT. (MIN.) INTERVALS ALONG WALL LENGTH.
9. TEMPORARY SAFETY FENCE SHALL BE INSTALLED MEETING CURRENT OSHA STANDARDS UNTIL PERMANENT FENCE (DESIGNED BY OTHERS) IS INSTALLED.
10. ALL EXCAVATIONS MADE FOR THE WALL CONSTRUCTION SHALL BE APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER AND MEET OSHA STANDARDS PRIOR TO CONSTRUCTION.
11. CONTRACTOR SHALL GIVE CONSTRUCTION VERIFICATION ENGINEER 48 HOURS NOTICE PRIOR TO POURING ANY CONCRETE. ALL REINFORCING STEEL SHALL BE INSPECTED BY THE CONSTRUCTION VERIFICATION ENGINEER PRIOR TO POURING CONCRETE.

12. FOOTINGS MAY BE CAST INTO AN EARTH-FORMED TRENCH IF SOIL CONDITIONS PERMIT.
13. EXCAVATION FOR FOOTING SHALL BE CUT TO ACCURATE SIZE AND DIMENSIONS AS SHOWN ON PLANS. ALL SOIL BELOW SLABS AND FOOTINGS SHALL BE PROPERLY COMPACTED AND SUB GRADE BROUGHT TO A REASONABLE TRUE AND LEVEL PLANE BEFORE PLACING CONCRETE.
14. ALL BEARING MATERIAL SHALL BE INSPECTED BY THE INDEPENDENT TESTING AGENCY PRIOR TO CONCRETE PLACEMENT. THE INDEPENDENT TESTING AGENCY SHALL BE THE SOLE JUDGE AS TO THE SUITABILITY OF THE BEARING MATERIAL. FOOTING ELEVATIONS SHALL BE ADJUSTED AS REQUIRED.
15. NO EXCAVATION SHALL BE CLOSER THAN A 2:1 (2 HORIZONTAL TO 1 VERTICAL) ZONE OF INFLUENCE EXTENDING OUT DOWNWARD FROM THE CAST-IN-PLACE FOOTING. PROVIDE SHORING AND PROTECTION FOR EXCAVATION BANKS A NECESSARY TO PRESERVE SAFETY AND PREVENT CAVING.
16. ALL BEARING STRATA SHALL BE ADEQUATELY DRAINED BEFORE FOUNDATION CONCRETE IS PLACED.
17. THE CONTRACTOR SHALL INFORM THE PROFESSIONAL OF RECORD IN WRITING OF ANY DEVIATION FROM THE CONTRACT DOCUMENTS.
18. AT ALL TIMES THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF PERSONS AND PROPERTY. THE ARCHITECT'S OR ENGINEER'S PRESENCE AT THE JOB SITE FOR REVIEW OF WORK DOES NOT IMPLY CONFIRMATION OF THE ADEQUACY OF THE CONTRACTOR'S MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLIANCE WITH OSHA REGULATIONS.
19. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE CIVIL ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES.
20. BRACE WALLS DURING BACKFILLING OR USE HAND OPERATED EQUIPMENT WITHIN 5' BEHIND WALLS.
21. FACTORS OF SAFETY:

F.S. OF SLIDING = 1.5

F.S. OF OVERTURNING = 1.5

F.S. OF BEARING CAPACITY = 2.0

F.S. OF GLOBAL STABILITY = 1.3

22. THE CAST-IN-PLACE CONCRETE RETAINING WALL IS BASED ON THE FOLLOWING PARAMETERS:

EFFECTIVE FRICTION ANGLE = 24°

COEFFICIENT OF FRICTION = 0.35

UNIT WEIGHT OF SOIL = 120 PCF

BEARING CAPACITY OF SOIL = 2,000 PSF

SURCHARGE = 250 PSF

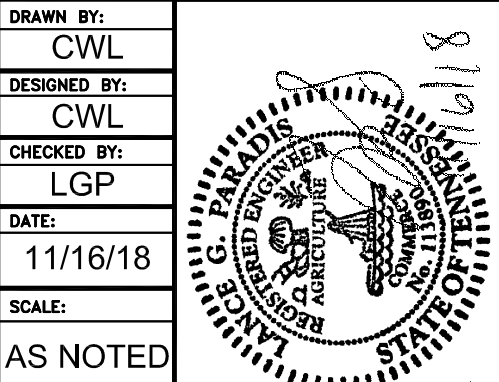
HYDROSTATIC LOAD = BOTTOM OF WALL ELEVATION
23. THIS DESIGN IS BASED UPON SPECIFIC PROPERTIES OF MATERIALS WHICH ARE PROPRIETARY. ANY SUBSTITUTION OF THE SPECIFIED PRODUCTS OR CHANGE IN STRUCTURE GEOMETRY WILL INVALIDATE THIS DESIGN. THIS DRAWING IS BEING FURNISHED FOR USE ON THIS SPECIFIC PROJECT ONLY. ANY PARTY ACCEPTING THIS DOCUMENT DOES SO IN CONFIDENCE AND AGREES THAT IT SHALL NOT BE DUPLICATED, IN WHOLE OR IN PART, NOR DISCLOSED TO OTHERS WITHOUT THE CONSENT OF ENGINEERED EARTH SOLUTIONS, LLC. THIS DRAWING, DESIGN NOTES, AND ASSOCIATED CALCULATIONS HAVE BEEN PREPARED BY ENGINEERED EARTH SOLUTIONS, LLC. FROM INFORMATION PROVIDED BY OTHERS. FINAL DETERMINATION OF THE SUITABILITY OF ANY INFORMATION CONTAINED HEREIN IS THE RESPONSIBILITY OF THE USER.
24. CONSTRUCTION VERIFICATION OF THE WALL INSTALLATION BY AN ENGINEER IS REQUIRED AND MUST BE PROVIDED BY A KNOWLEDGEABLE GEOTECHNICAL ENGINEER FAMILIAR WITH CAST-IN-PLACE STRUCTURES. EES CAN PERFORM THIS VERIFICATION AS REQUESTED BUT MUST INCLUDE DAILY SITE VISITS.
25. FAILURE OF QUALITY ASSURANCE TESTING AND INSPECTION TO DETECT ANY DEFECTIVE WORK OR MATERIAL SHALL NOT IN ANY WAY PREVENT LATER REJECTION WHEN SUCH DEFECT IS NOTED, NOR SHALL IT OBLIGATE THE OWNER'S REPRESENTATIVE FOR FINAL ACCEPTANCE.
26. GEOTECHNICAL REPORT BY TERRACON CONSULTANTS, INC. DATED 08/16/2018 WAS PROVIDED FOR USE. BORINGS WERE INCLUDED WHICH INDICATE GENERAL SOIL TYPES. THE OWNER OR OWNER'S REPRESENTATIVE HAS PROVIDED SPECIFIC SOIL PARAMETERS FOR THE PROPOSED EARTH STRUCTURE. IN PREPARATION OF THE DESIGN, THESE SOIL PARAMETERS WERE USED. CONSTRUCTION VERIFICATION OF THE ABOVE SOIL CONDITIONS IS IMPERATIVE PRIOR TO AND DURING CONSTRUCTION. FAILURE TO VALIDATE THESE SOIL PARAMETERS CAN RESULT IN STRUCTURE FAILURE.
27. COPYRIGHT © 2018 ENGINEERED EARTH SOLUTIONS, LLC.

NOTE: THE CIVIL SITE DESIGNER SHALL APPROVE PRIOR TO CONSTRUCTION THE DETAILED LAYOUT FOR THE RETAINING WALL(S) AS SHOWN IN THESE SHOP DRAWINGS. DESIGN AND COORDINATION OF SURFACE DRAINAGE, STORM STRUCTURES, UTILITIES, FENCES, CURBS, GUARDRAILS AND OTHER NEW AND EXISTING IMPROVEMENTS IN THE RETAINING WALL AREA REMAINS THE SOLE RESPONSIBILITY OF THE CIVIL SITE DESIGNER.

THE WALL INSTALLER IS RESPONSIBLE FOR PROVIDING DRAINAGE AS SHOWN ON THE CONSTRUCTION DRAWINGS. FAILURE TO FOLLOW THESE DRAWINGS IN THEIR ENTIRETY WILL INVALIDATE THE DESIGN.

REVISION / ISSUE

DRAWN BY:  
DESIGNED BY:  
CHECKED BY:  
DATE:  
SCALE:  
AS NOTED



INGENIUM  
ENTERPRISES, INC.  
221 ROSWELL STREET, SUITE 100  
ALPHARETTA, GA 30009  
TEL: (770) 437-8850  
CLIENT



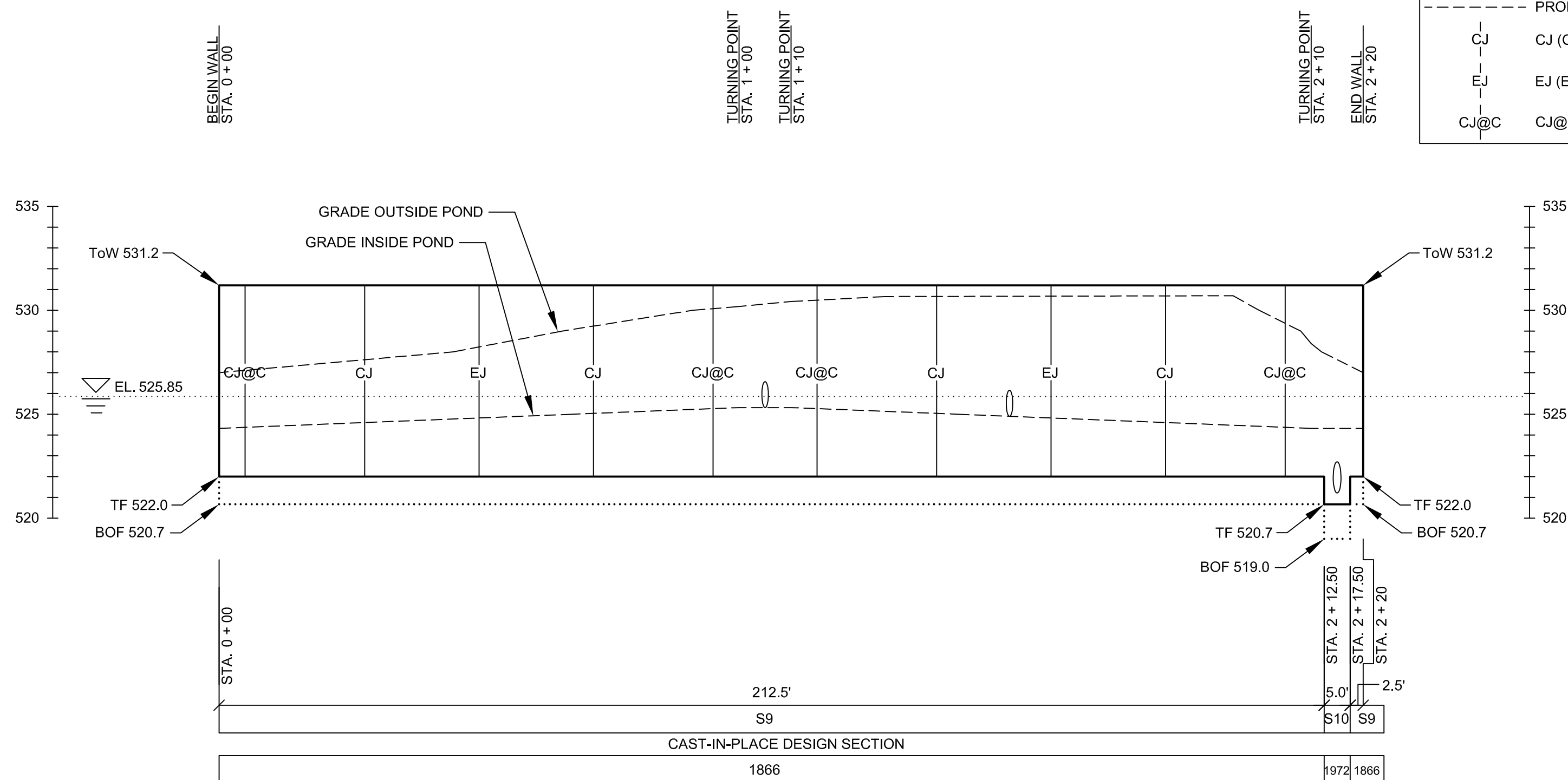
PANDA EXPRESS  
TENNESSEE  
NASHVILLE

TITLE SHEET  
SHEET  
CIP1  
OF 3  
PROJECT NO.: M18-0979

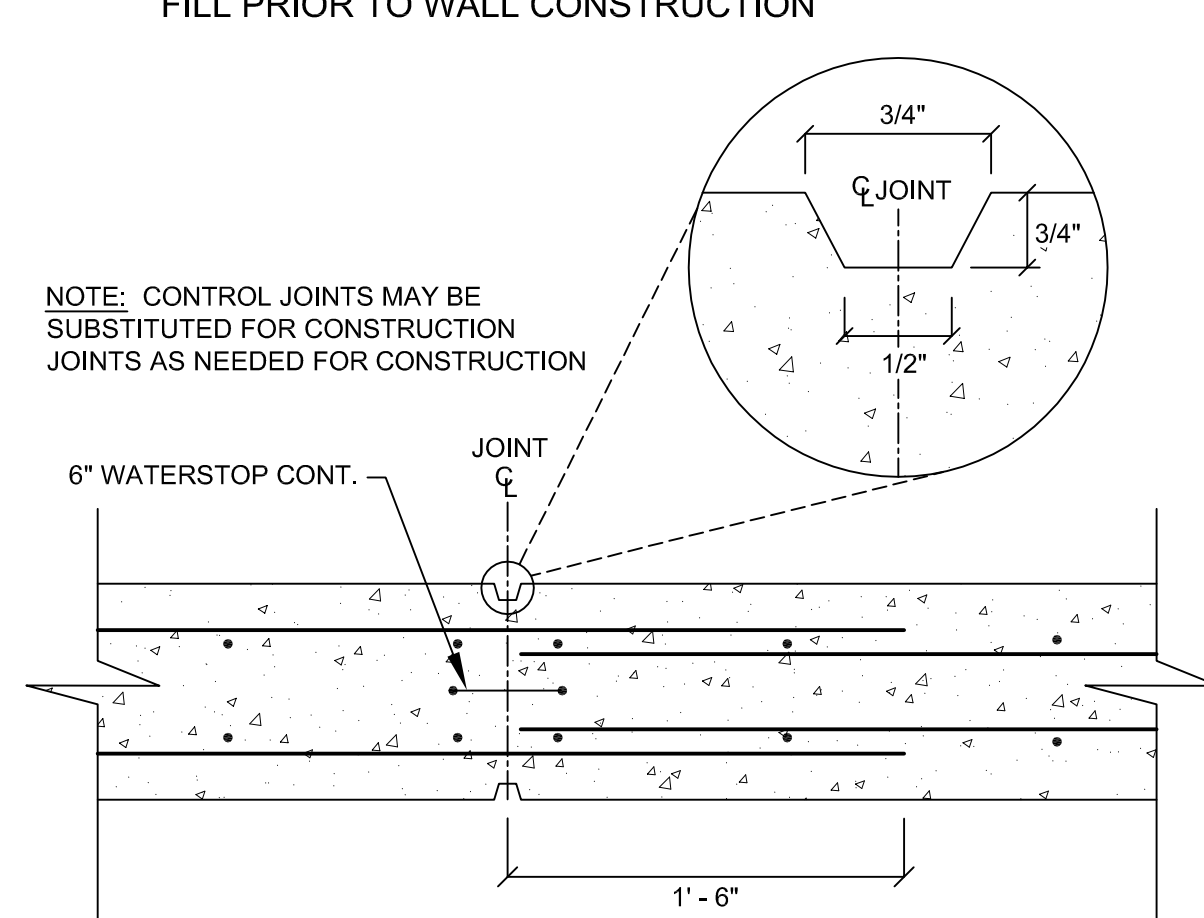


| LEGEND |                                       |
|--------|---------------------------------------|
| TF     | TOP OF FOOTING                        |
| ToW    | TOP OF WALL                           |
| BOF    | BOTTOM OF FOOTING                     |
| ----   | PROPOSED GRADE AT WALL                |
| CJ     | CJ (CONTROL JOINT/CONSTRUCTION JOINT) |
| EJ     | EJ (EXPANSION JOINT)                  |
| CJ@C   | CJ@C (CONSTRUCTION JOINT AT CORNER)   |

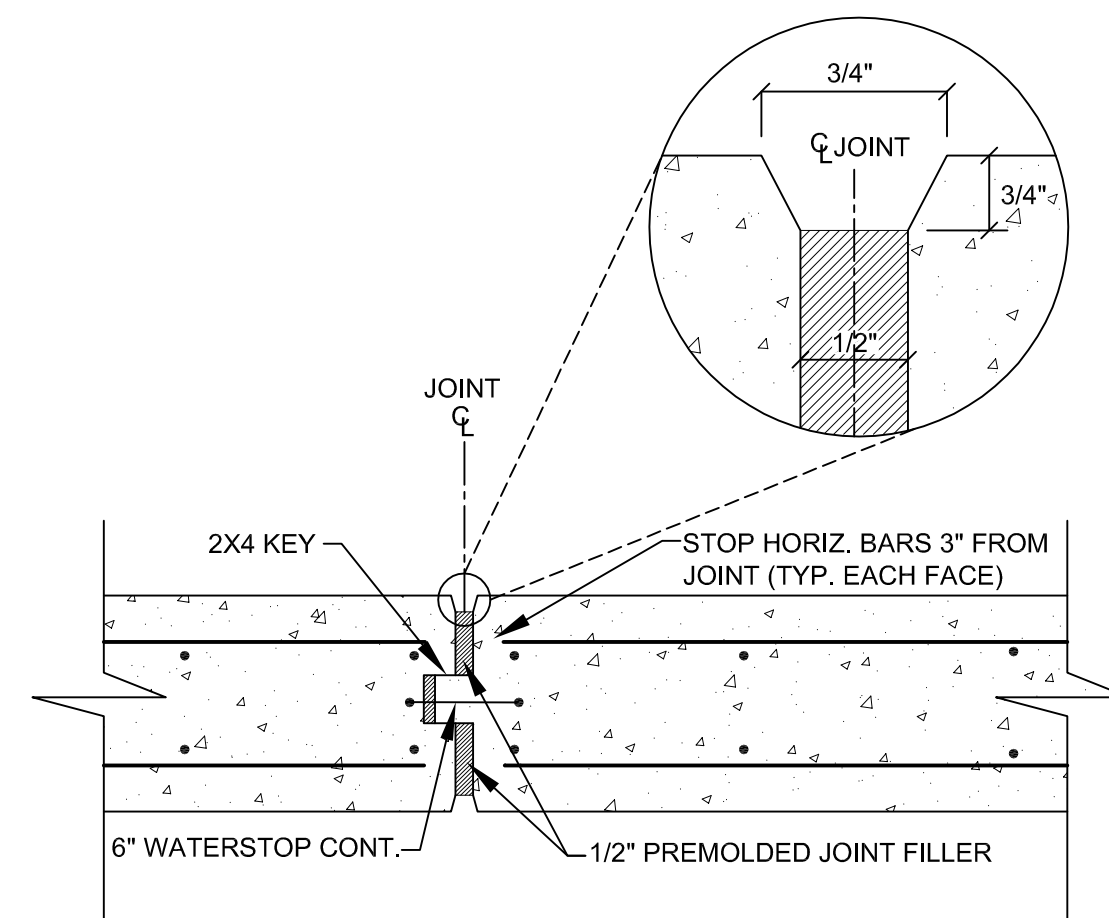
**NOTE: CONSTRUCTION VERIFICATION OF THE WALL INSTALLATION BY AN ENGINEER IS REQUIRED BY THE LOCAL MUNICIPALITY AND MUST BE PROVIDED BY A KNOWLEDGEABLE GEOTECHNICAL ENGINEER FAMILIAR WITH CAST-IN-PLACE STRUCTURES.**



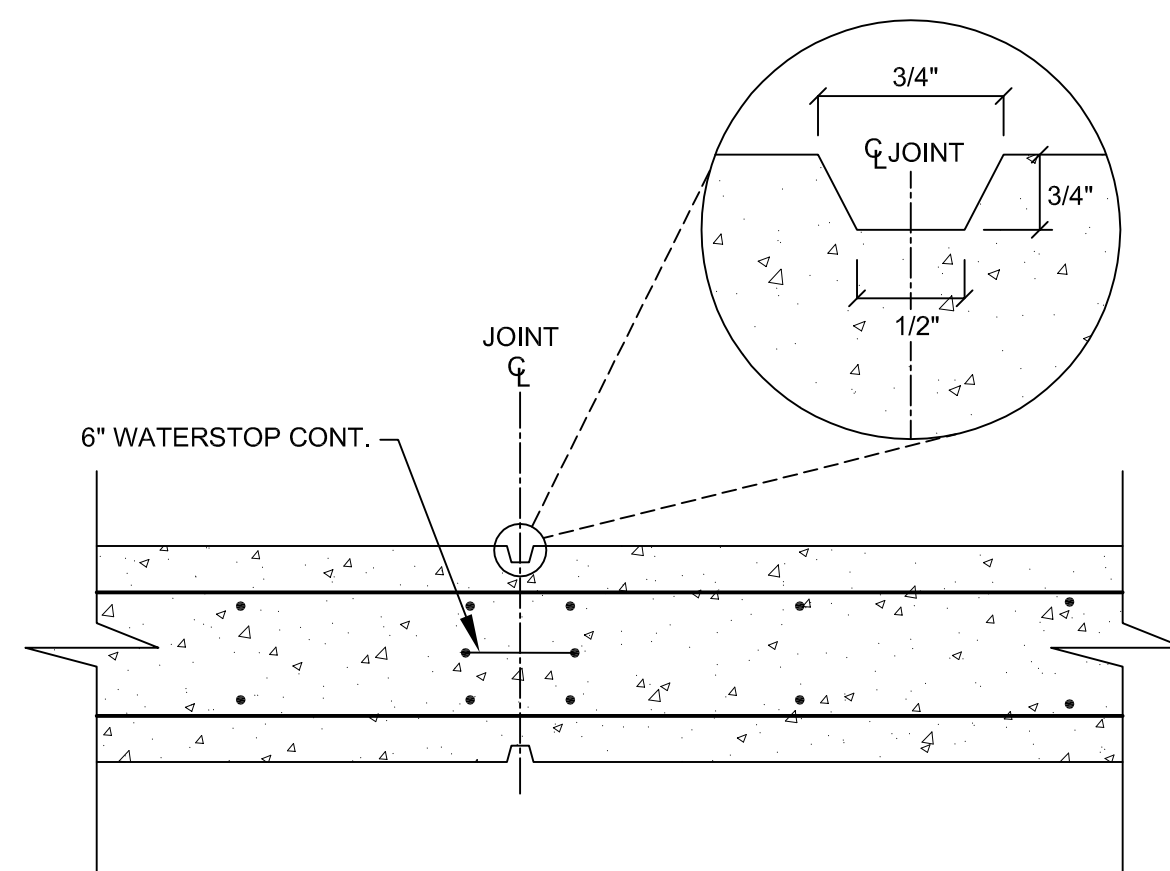
NOTE: ALL CH OR MH MATERIAL BELOW THE WALL REINFORCED ZONE IS TO BE REMOVED AND REPLACED WITH COMPACTED STRUCTURAL FILL PRIOR TO WALL CONSTRUCTION



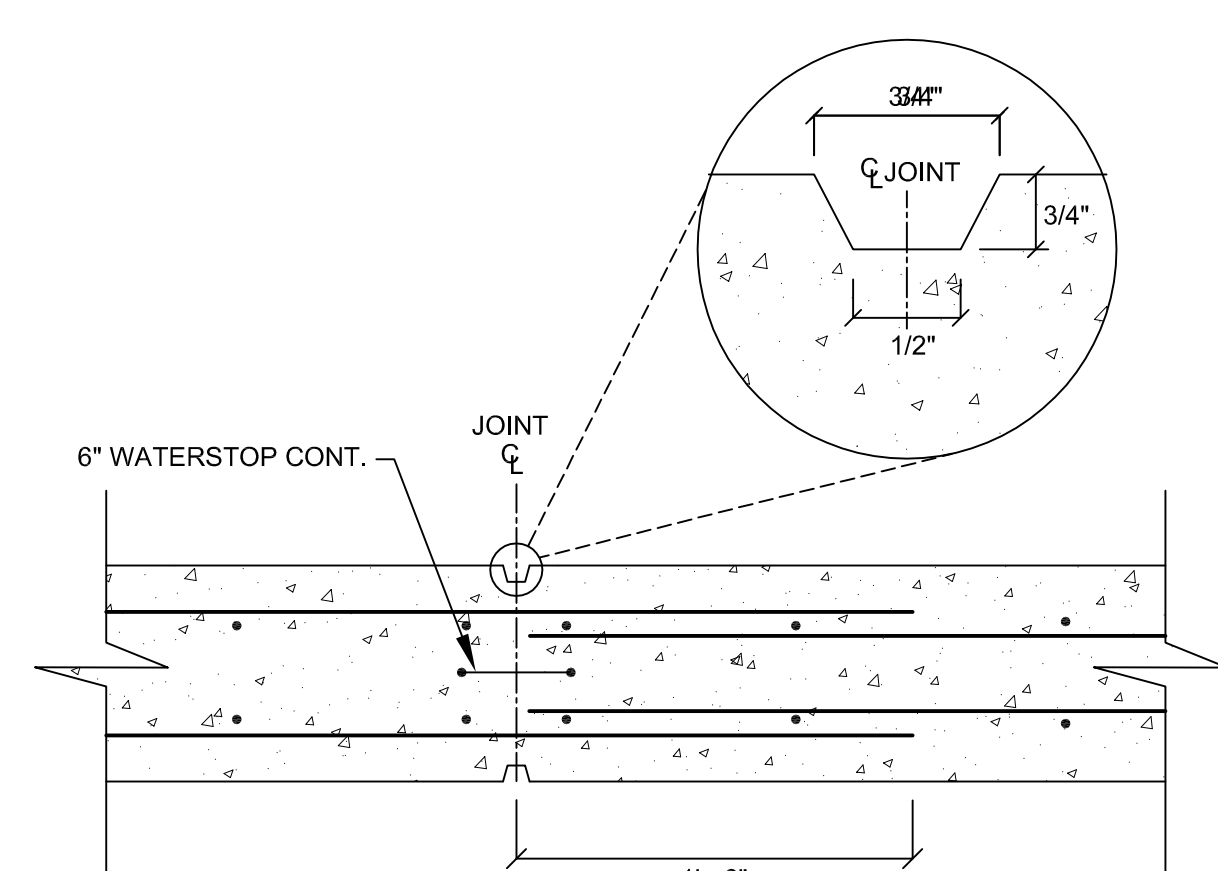
CONSTRUCTION JOINT  
NOT TO SCALE



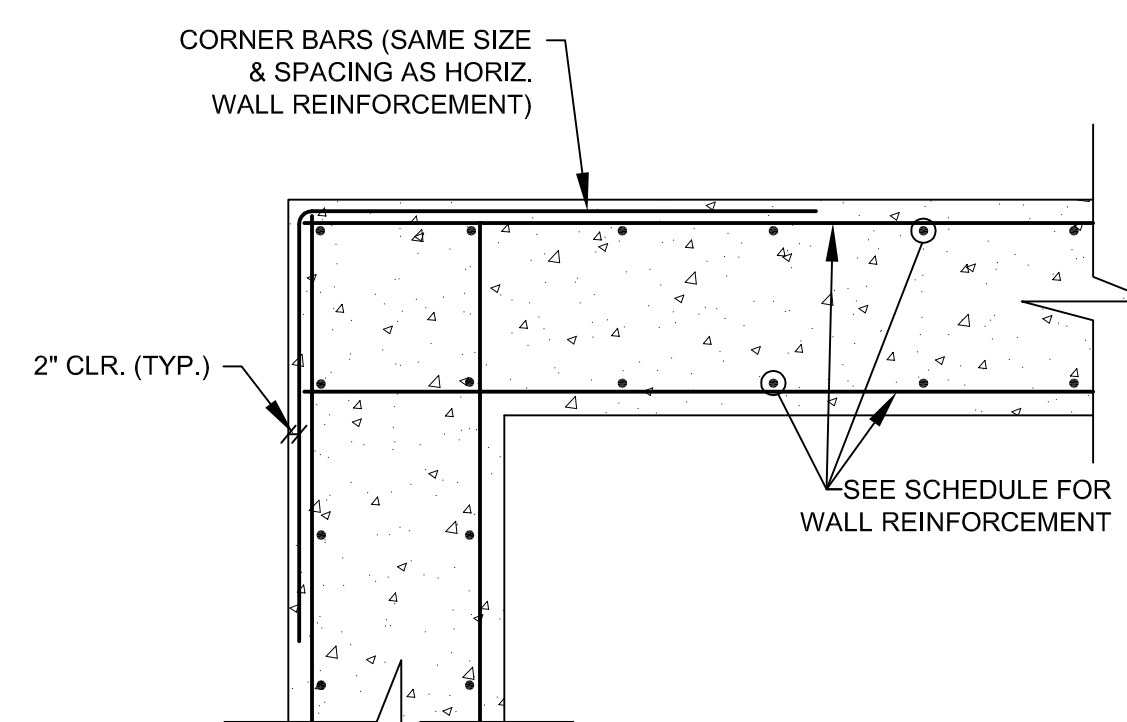
EXPANSION JOINT - 100.0' O.C. MAX.  
NOT TO SCALE



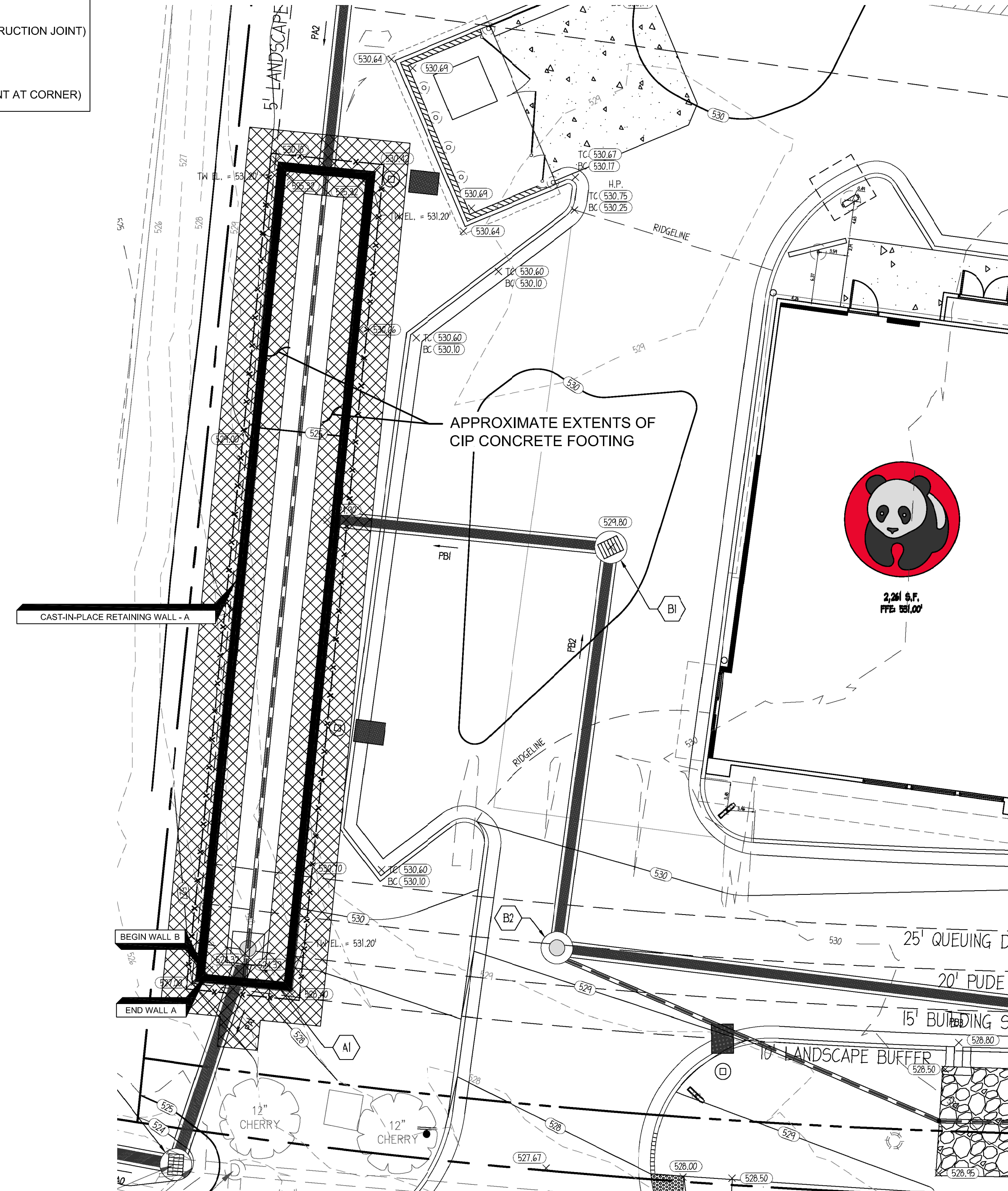
CONTROL JOINT - 25.0' O.C. MAX.  
NOT TO SCALE



CONSTRUCTION JOINT - 5.0' MIN. FROM CORNER



CORNER REINFORCEMENT DETAIL  
NOT TO SCALE



PLAN VIEW  
NOT TO SCALE

THE ABOVE PLAN VIEW HAS BEEN COPIED FROM CIVIL SITE PLANS  
PREPARED BY INGENIUM ENTERPRISES DATED 11/09/2018 FOR  
REFERENCE. REFER TO CIVIL SITE PLANS FOR STRUCTURE LAYOUT  
INFORMATION. CAST-IN-PLACE WALL LAYOUT SHALL BE APPROVED BY  
THE CIVIL SITE DESIGNER PRIOR TO CONSTRUCTION.

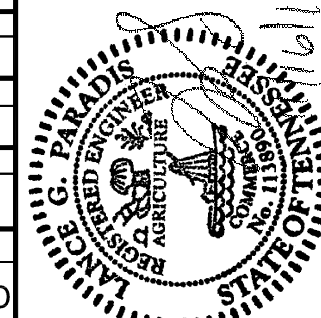
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|              |          |
|--------------|----------|
| DRAWN BY:    | CWL      |
| DESIGNED BY: | CWL      |
| CHECKED BY:  | LGP      |
| DATE:        | 11/16/18 |
| SCALE:       | AS NOTED |



**INGENIUM  
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ENGINEER

# PANDA EXPRESS

TENNESSEE

NASHVILLE

PLAN, ELEVATION VIEW  
& DETAIL SHEET

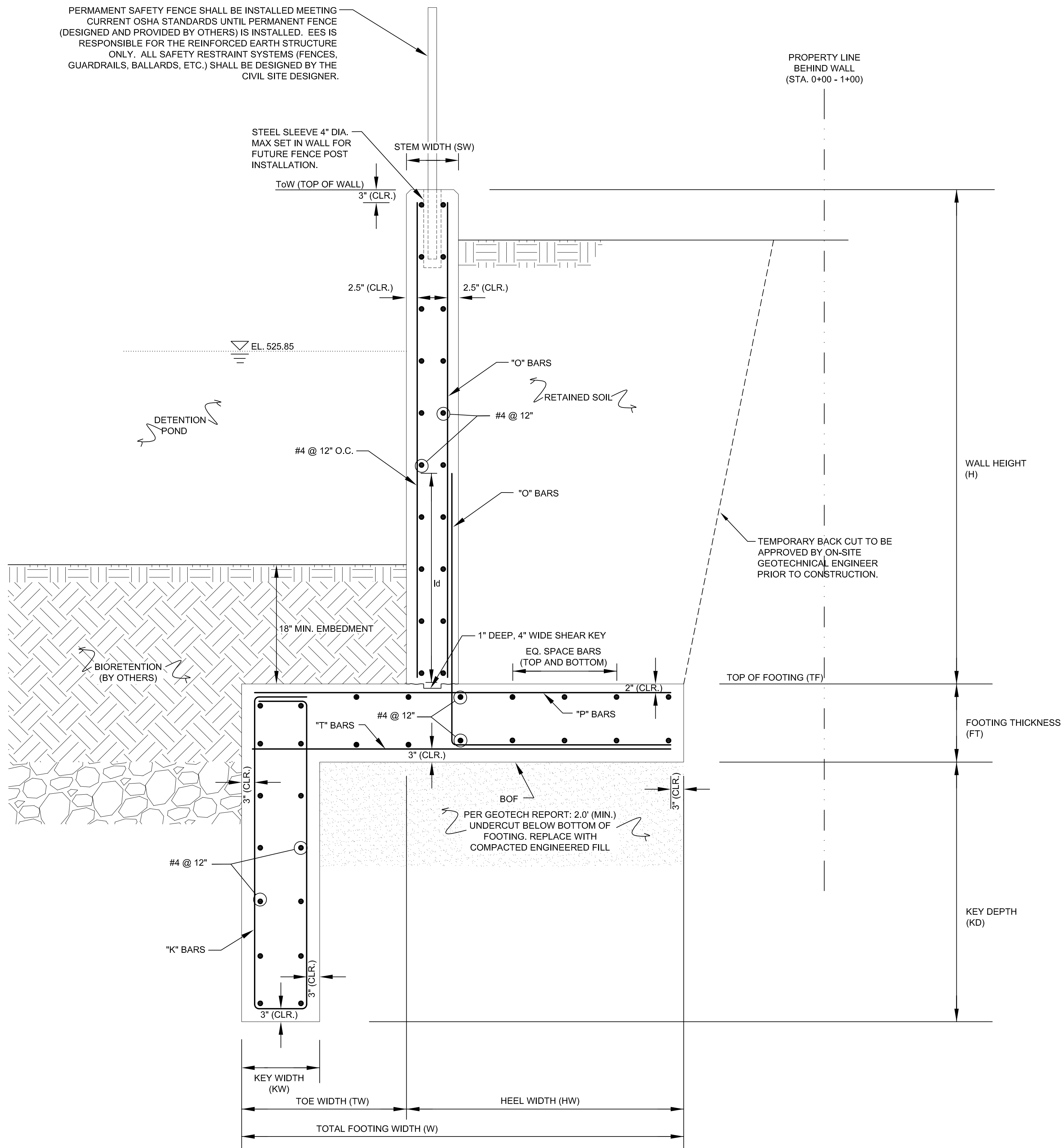
SHEET

# CIP2

OF 3

PROJECT NO.: M18-0979



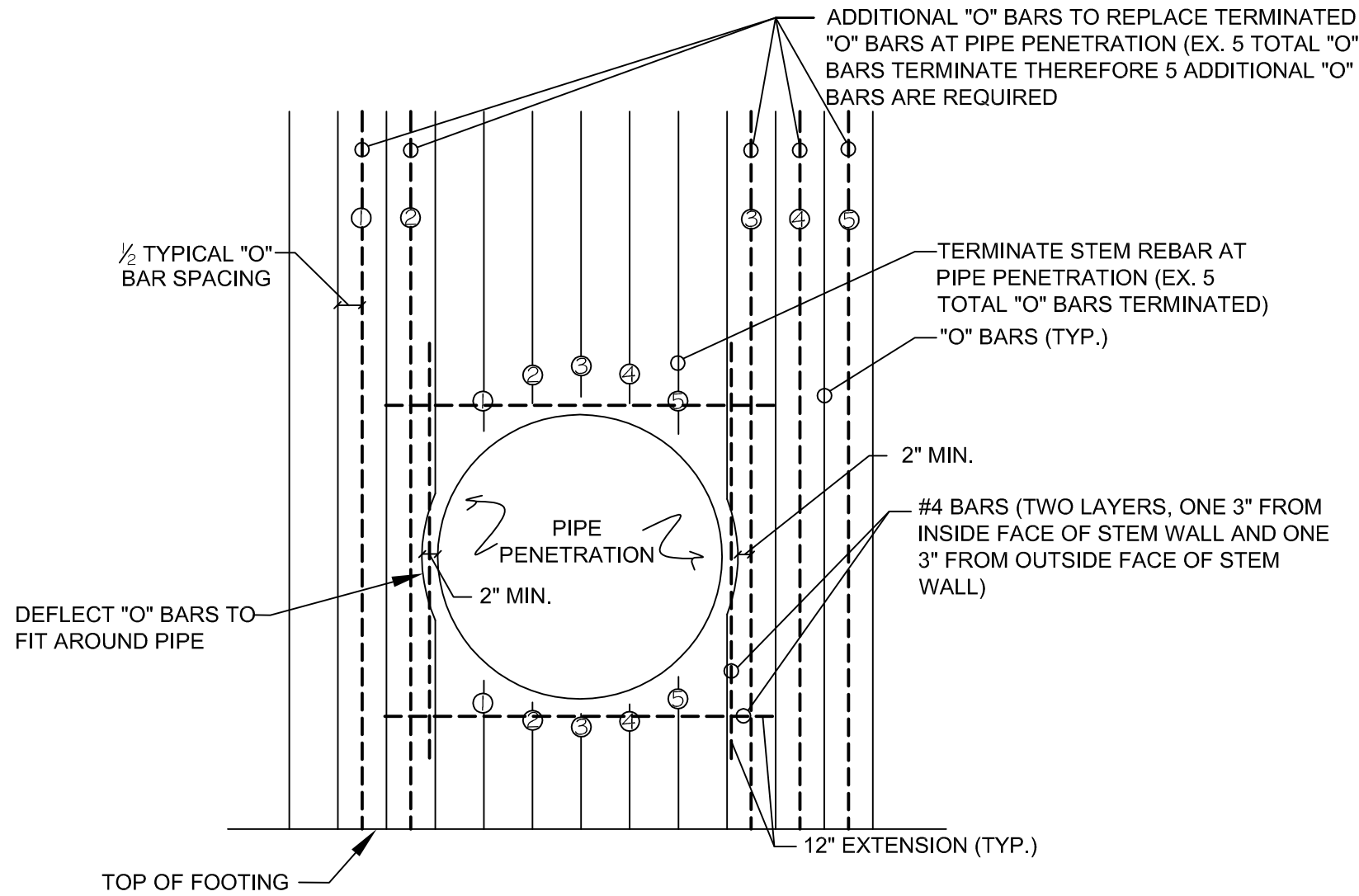


SEE CAST IN PLACE (CIP) RETAINING WALL SCHEDULE FOR REINFORCEMENT AND DIMENSIONS

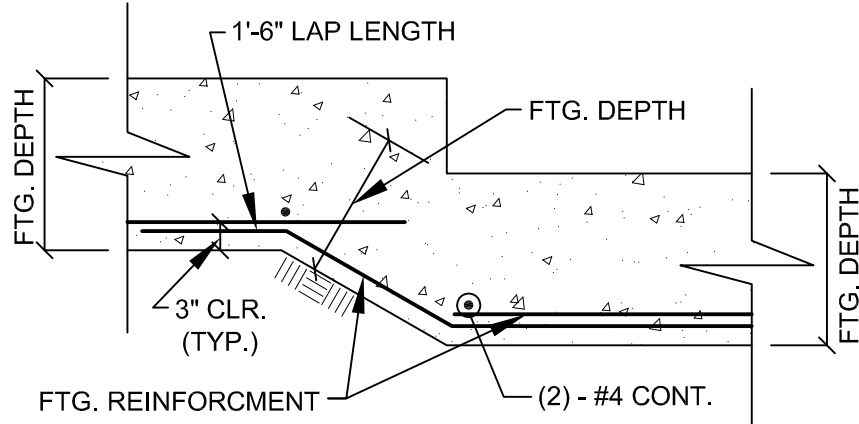
**TYPICAL CAST IN PLACE CROSS SECTION**  
NOT TO SCALE

| CIP RETAINING WALL SCHEDULE |       |     |     |        |       |       |     |       |               |               |               |               |
|-----------------------------|-------|-----|-----|--------|-------|-------|-----|-------|---------------|---------------|---------------|---------------|
| Design Section              | H     | SW  | FT  | W      | TW    | HW    | KW  | KD    | "O"<br>(Dwls) | "T"<br>(Bars) | "P"<br>(Bars) | "K"<br>(Bars) |
| Cast-In-Place Sections      |       |     |     |        |       |       |     |       |               |               |               |               |
| S10                         | 10.2' | 12" | 20" | 10'-6" | 1'-9" | 8'-9" | 12" | 4'-1" | #6 @ 9"       | #5 @ 9"       | #6 @ 9"       | #4 @ 9"       |
| S9                          | 9.2'  | 12" | 15" | 7'-6"  | 2'-6" | 5'-0" | 12" | 4'-6" | #5 @ 9"       | #5 @ 9"       | #5 @ 9"       | #4 @ 9"       |

NOTE: CONSTRUCTION VERIFICATION OF THE WALL INSTALLATION BY AN ENGINEER IS REQUIRED BY THE LOCAL MUNICIPALITY AND MUST BE PROVIDED BY A KNOWLEDGEABLE GEOTECHNICAL ENGINEER FAMILIAR WITH CAST-IN-PLACE STRUCTURES.



**PIPE PENETRATION DETAIL**  
NOT TO SCALE



**STEPPED FOOTING DETAIL**  
NOT TO SCALE

| BAR NO. | ld (DEVELOPMENT LENGTH - USED FOR SPLICING BARS) |
|---------|--|
| 4       | 29"  |
| 5       | 36"  |
| 6       | 43"  |

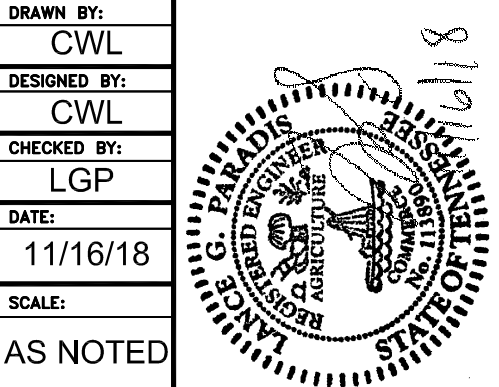
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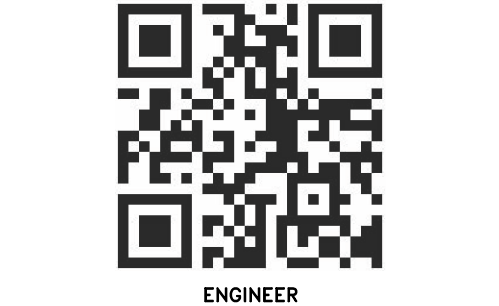
| NO. | DATE     | DESCRIPTION            |
|-----|----------|------------------------|
| 1   | 11/16/18 | ISSUE FOR CONSTRUCTION |

|              |          |
|--------------|----------|
| DRAWN BY:    | CWL      |
| DESIGNED BY: | CWL      |
| CHECKED BY:  | LGP      |
| DATE:        | 11/16/18 |
| SCALE:       | AS NOTED |



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TENNESSEE

NASHVILLE

DETAIL SHEET

SHEET  
**CIP3**  
OF 3

PROJECT NO.: M18-0979