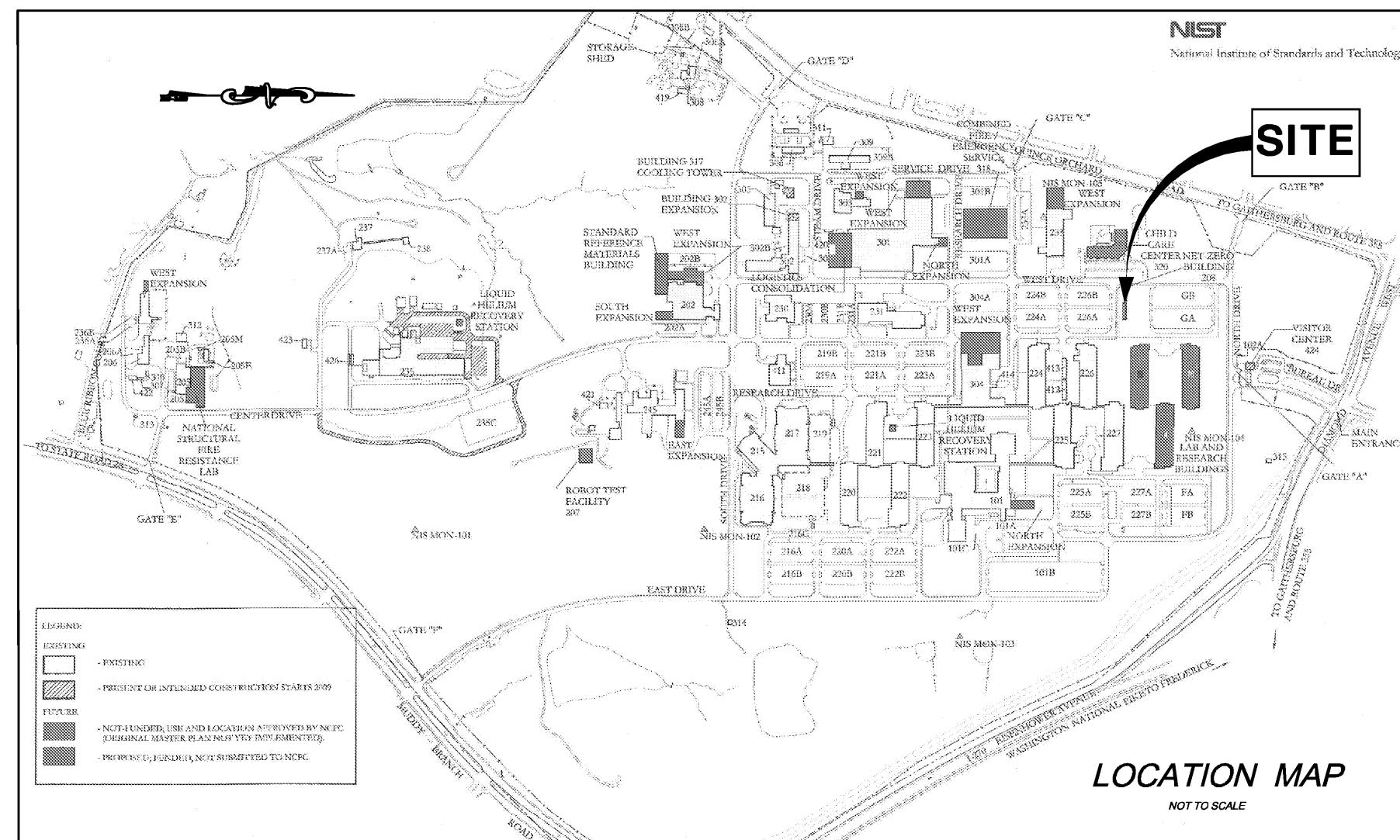
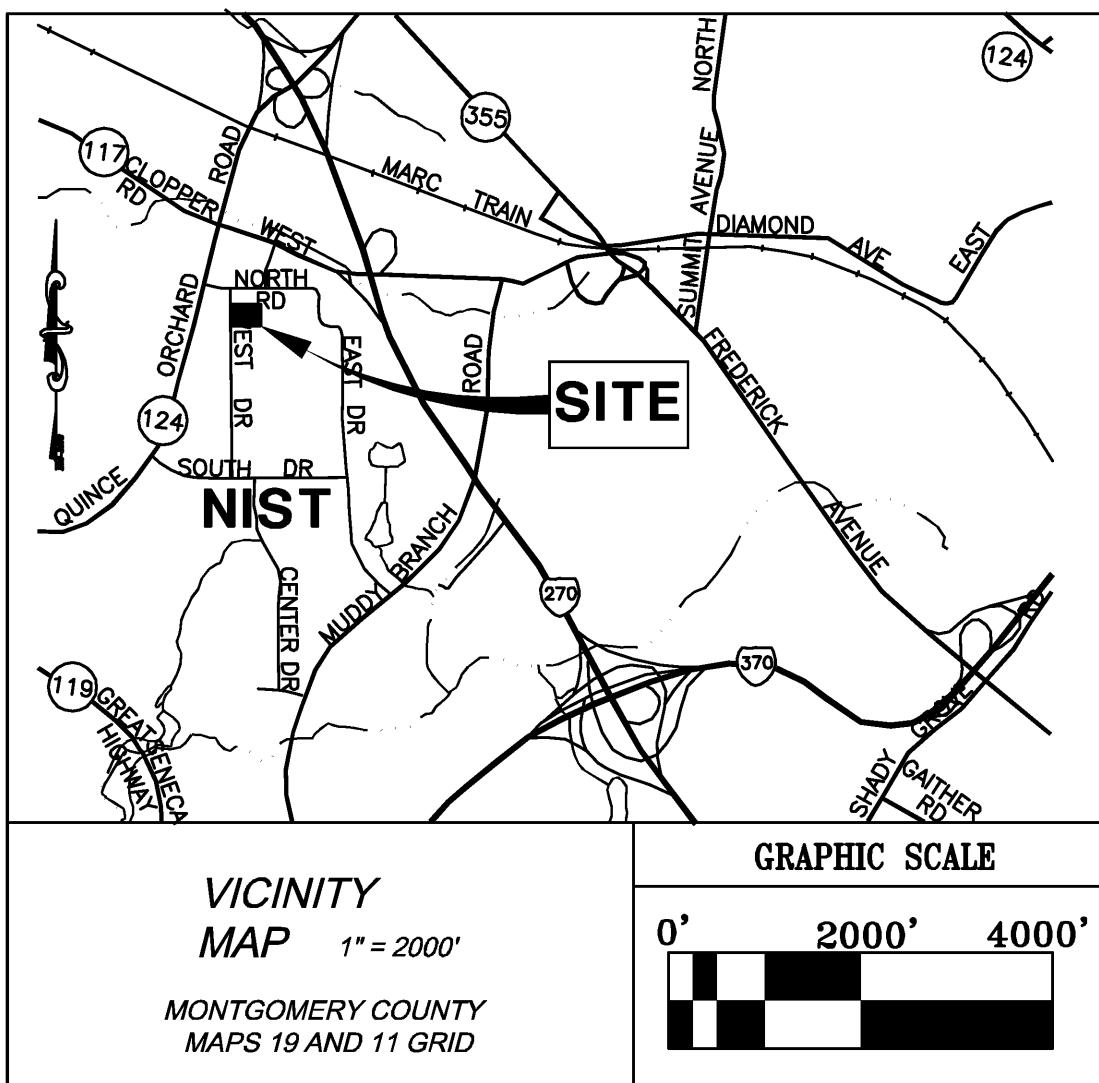


NIST

UTILITY AND SITE DESIGN MARCH 2010

NET ZERO ENERGY RESIDENTIAL TEST FACILITY

UNITED STATES DEPARTMENT OF COMMERCE
THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
GAIITHERSBURG, MARYLAND



PROPERTY ADDRESS
NIST CAMPUS
WEST STREET
GAIITHERSBURG, MARYLAND

PROPERTY OWNER/APPLICANT
UNITED STATES DEPARTMENTS OF COMMERCE
THE NATIONAL INSTITUTE OF STANDARDS
AND TECHNOLOGY
GAIITHERSBURG, MARYLAND
(301) 975-8339
CONTACT PERSON: SILVIO BARUZZI

APPROVED BY	DATE	SPONSOR	DATE	MAINTENANCE ENG. OFF.	DATE	FIRE PROTECTION SVS.	DATE	S.H. & E. DIV.	DATE	FACILITIES ENGR. OFF.	DATE	PROJECT LEADER	DATE	KS/DN	02/01/10	SB134109CQ0026/69331	DRAWN BY	DATE	PROJECT/W.O.	DESIGN PROJ. #
-------------	------	---------	------	-----------------------	------	----------------------	------	----------------	------	-----------------------	------	----------------	------	-------	----------	----------------------	----------	------	--------------	----------------

REVISION	DESCRIPTION	BY	DATE
	95% CD SET		01/29/10
	100% CD SET		02/24/10
	ISSUED FOR CONSTRUCTION		03/31/10

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011."

KH KEAST & HOOD CO.
Structural Engineers
1850 M Street NW Washington, DC 20036
(202) 223-1941 Fax (202) 223-1942

AMT

A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBROOK PARKWAY ROCKVILLE, MD 20852
(301) 881-2545 FAX(301) 881-0814
EMAIL: AMT@AMTENGINEERING.COM

NIST

FOR OFFICIAL USE ONLY

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

NET ZERO ENERGY RESIDENTIAL TEST FACILITY

COVER SHEET

SH. NO. _____ OF _____	DWG. C-001
------------------------	------------

LEGEND	
■	GRATE INLET
○	TELEPHONE MANHOLE
○	COMMUNICATIONS MANHOLE
○	ELECTRIC MANHOLE
○	SANITARY SEWER MANHOLE
○	STORM DRAIN MANHOLE
○	LIGHT POLE
○	SIGN
○	WATER VALVE
○	FIRE HYDRANT
○	MONITORING WELL
○	BENCHMARK
○	STUMP
○	CONCRETE CURB
○	CONCRETE CURB & GUTTER
STM	STEAM PAINT WHITE
COMM	COMMUNICATION LINE PAINT MARK
UGE	ELECTRIC PAINT MARK
W	WATERLINE PAINT MARK
—	SIDEWALK
—	PAVEMENT (EDGE)
—	BUILDING
—	FENCE (CHAIN-LINK)

DEMOLITION NOTES:	
1	SAWCUT & REMOVE EXISTING SIDEWALK.
2	REMOVE EXISTING CONCRETE CURB.
3	SAWCUT & REMOVE EXISTING ASPHALT PAVING.
4	REMOVE EXISTING TREES.

DEMOLITION LEGEND:



ITEM TO BE REMOVED

STORM DRAIN DATA SANITARY SEWER DATA

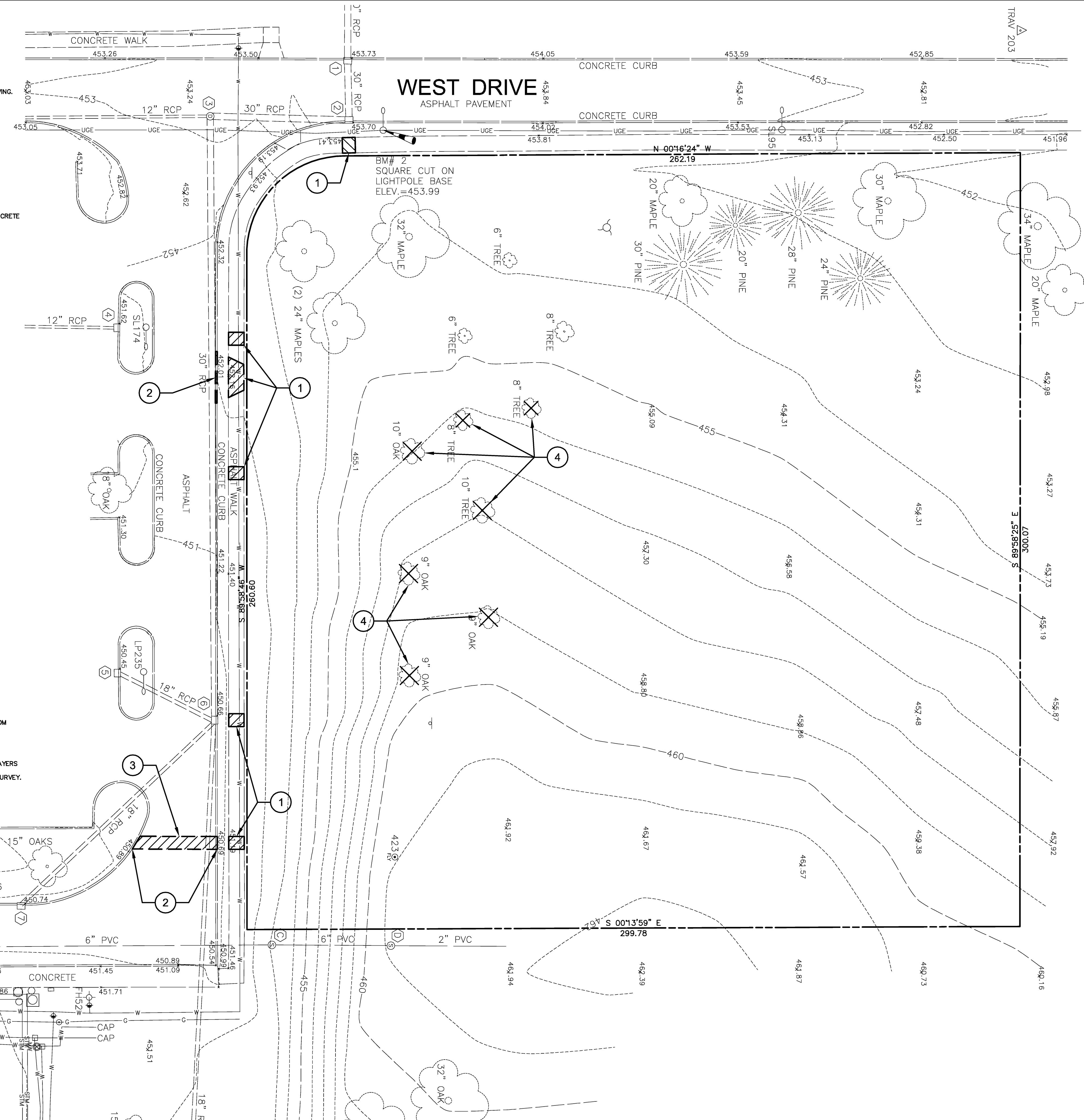
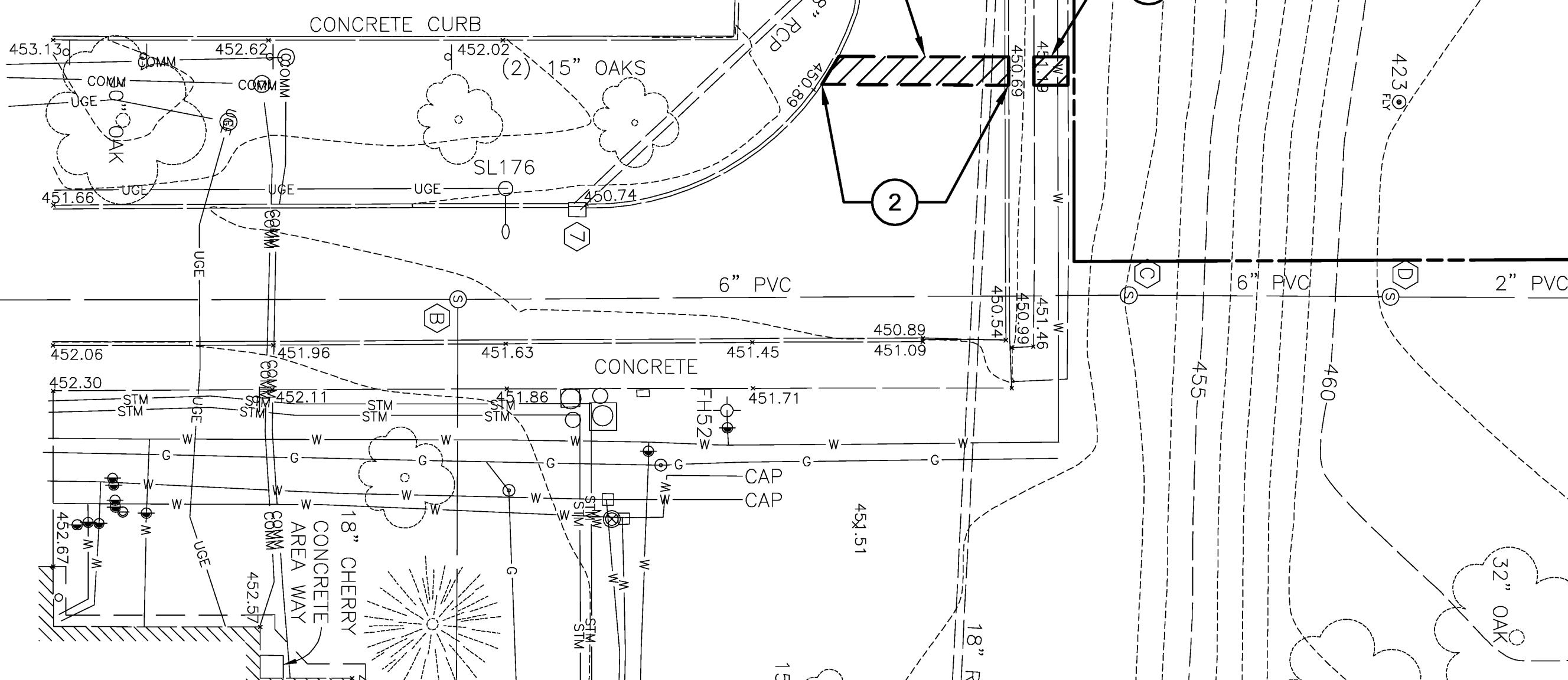
- CURB INLET
TOP=453.30
INV. IN=439.02
INV. OUT=438.92
- CURB INLET
TOP=453.22
INV. IN=439.25
INV. OUT=439.15
- MANHOLE
TOP=452.93
(E) INV. N=439.28
(S) INV. N=444.53
INV. OUT=439.18
- CURB INLET
TOP=450.97
INV. OUT=447.17
- CURB INLET
TOP=450.02
INV. OUT=443.72
- CURB INLET
TOP=450.25
(SW) INV. IN=442.80
(SE) INV. IN=441.55
(E) INV. N=440.85
(W) INV. OUT=440.55
- CURB INLET
TOP=450.30
INV. OUT=442.10
- GRATE INLET
TOP=450.61
(SW) INV. IN=445.96
(SE) INV. IN=445.99
(E) INV. N=443.61
(W) INV. OUT=443.21
- GRATE INLET
TOP=450.65
(SW) INV. IN=446.65
(SE) INV. IN=446.65
(E) INV. OUT=444.55

SURVEY CONTROL DATA

TRAVERSE NORTHING EASTING ELEV.
203 90749.986 -59932.294 452.71
204 90345.238 -59933.965 452.71

GENERAL NOTES

- HORIZONTAL DATUM: NIST COORDINATES BASED FROM MONUMENTS NBS-104 AND NBS-105
- VERTICAL DATUM: NIST ELEVATIONS BASED FROM MONUMENTS NBS-104 AND NBS-105
- SEE ADDITIONAL SPOT SHOTS ON FROZEN-HIDN LAYERS
- NO BOUNDARY WORK WAS PERFORMED WITH THIS SURVEY.



REVISION	DESCRIPTION	BY	DATE
	95% CD SET	01/29/10	
	100% CD SET	02/24/10	
	ISSUED FOR CONSTRUCTION	03/31/10	

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011."

KH KEAST & HOOD CO.
Structural Engineers
1850 M Street NW Washington, DC 20036
(202) 223-1941 Fax (202) 223-1942

AMT

A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBOOK PARKWAY ROCKVILLE, MD 20852
(301) 881-2545 FAX(301) 881-0814
EMAIL: AMT@AMTENGINEERING.COM

NIST NORTH

FOR OFFICIAL USE ONLY

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

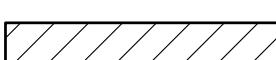
NET ZERO ENERGY RESIDENTIAL TEST FACILITY

EXISTING CONDITIONS/DEMOLITION PLAN

SH.NO. OF DWG. C-101

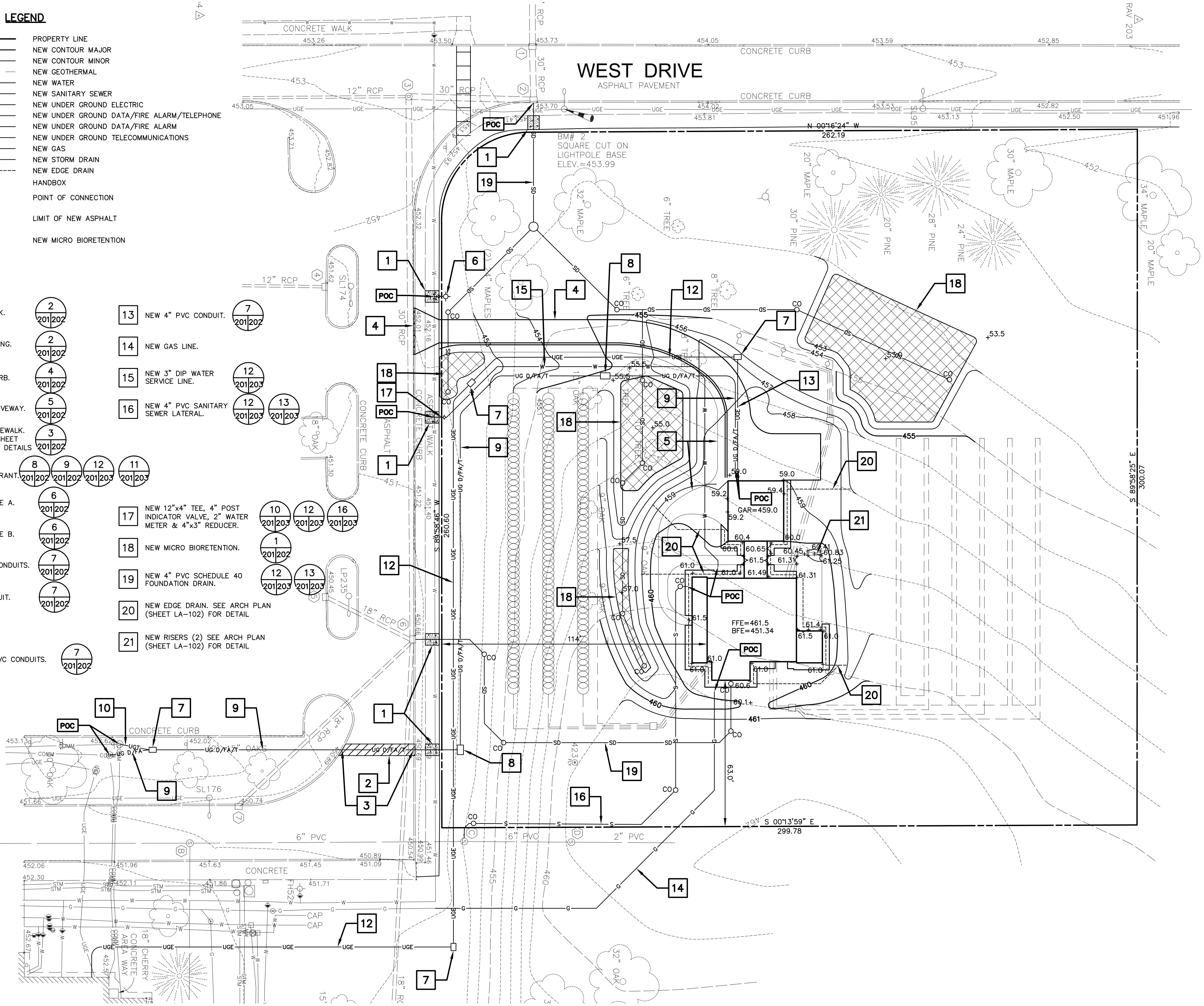
APPROVED BY	DATE	SPONSOR	DATE	MAINTENANCE ENG. OFF.	DATE	FIRE PROTECTION SVS.	DATE	S.H. & E. DIV.	DATE	FACILITIES ENGR. OFF.	DATE	PROJECT LEADER	DATE	KS/DN	02/01/10	SBI34109CQ0026/69331	DRAWN BY	DATE	PROJECT/W.C.	DESIGN PROJ. #
-------------	------	---------	------	-----------------------	------	----------------------	------	----------------	------	-----------------------	------	----------------	------	-------	----------	----------------------	----------	------	--------------	----------------

LEGEND

-----	PROPERTY LINE
-----	NEW CONTOUR MAJOR
-----	NEW CONTOUR MINOR
-----	NEW GEOTHERMAL
W	NEW WATER
S	NEW SANITARY SEWER
UGE	NEW UNDER GROUND ELECTRIC
UG D/FA/T	NEW UNDER GROUND DATA/FIRE ALARM/TELEPHONE
UG D/FA	NEW UNDER GROUND DATA/FIRE ALARM
UGT	NEW UNDER GROUND TELECOMMUNICATIONS
G	NEW GAS
SD	NEW STORM DRAIN
-----	NEW EDGE DRAIN
	HANDBOX
	POINT OF CONNECTION
	LIMIT OF NEW ASPHALT
	NEW MICRO BIORETENTION

KEYED NOTES

- | | | | | | |
|-----------------------------|---|--|-----------------------------|--|--|
| <input type="checkbox"/> 1 | NEW ASPHALT WALK. | | <input type="checkbox"/> 13 | NEW 4" PVC CONDUIT. | |
| <input type="checkbox"/> 2 | NEW ASPHALT PAVING. | | <input type="checkbox"/> 14 | NEW GAS LINE. | |
| <input type="checkbox"/> 3 | NEW CONCRETE CURB. | | <input type="checkbox"/> 15 | NEW 3" DIP WATER SERVICE LINE. | |
| <input type="checkbox"/> 4 | NEW CONCRETE DRIVEWAY. | | <input type="checkbox"/> 16 | NEW 4" PVC SANITARY SEWER LATERAL. | |
| <input type="checkbox"/> 5 | NEW CONCRETE SIDEWALK.
SEE ARCH PLAN (SHEET LA-102) FOR EDGE DETAILS | | | | |
| <input type="checkbox"/> 6 | NEW 12x6 TEE, 6" VALVE & FIRE HYDRANT. | | <input type="checkbox"/> 17 | NEW 12"x4" TEE, 4" POST INDICATOR VALVE, 2" WATER METER & 4"x3" REDUCER. | |
| <input type="checkbox"/> 7 | NEW HANDBOX TYPE A. | | <input type="checkbox"/> 18 | NEW MICRO BIORETENTION. | |
| <input type="checkbox"/> 8 | NEW HANDBOX TYPE B. | | <input type="checkbox"/> 19 | NEW 4" PVC SCHEDULE 40 FOUNDATION DRAIN. | |
| <input type="checkbox"/> 9 | NEW (2) 3" PVC CONDUITS. | | <input type="checkbox"/> 20 | NEW EDGE DRAIN. SEE ARCH PL. (SHEET LA-102) FOR DETAIL | |
| <input type="checkbox"/> 10 | NEW 3" PVC CONDUIT. | | <input type="checkbox"/> 21 | NEW RISERS (2) SEE ARCH PL. (SHEET LA-102) FOR DETAIL | |
| <input type="checkbox"/> 11 | NOT USED. | | | | |
| <input type="checkbox"/> 12 | NEW (3) 3 1/2" PVC CONDUITS. | | | | |



PROFESSIONAL CERTIFICATION

**"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM A
DULY LICENSED PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MARYLAND,
LICENSE NO. 12564, EXPIRATION DATE 08/10/2011."**



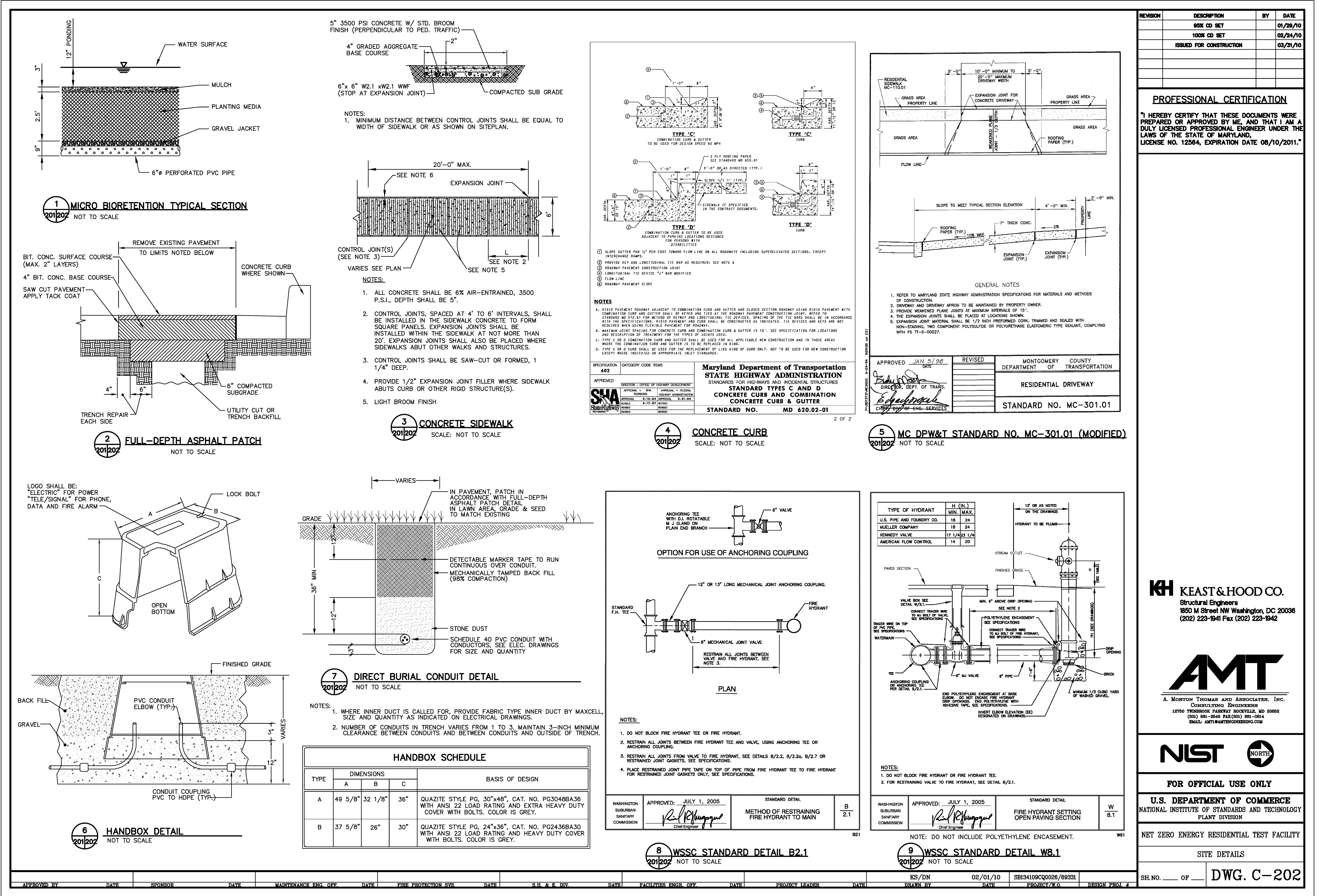
FOR OFFICIAL USE ONLY

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

NET ZERO ENERGY RESIDENTIAL TEST FACILITY

SITE / GRADING PLAN

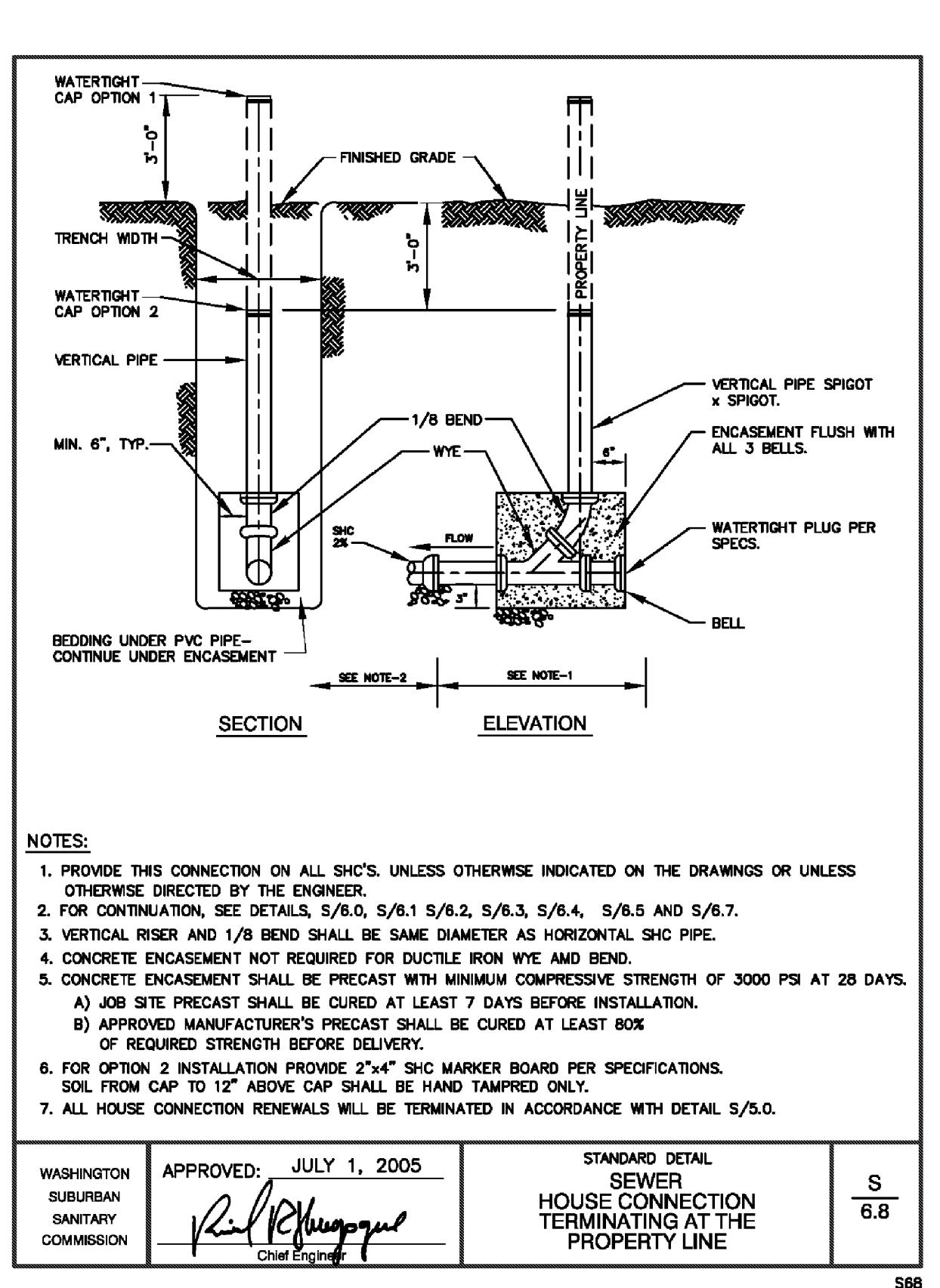
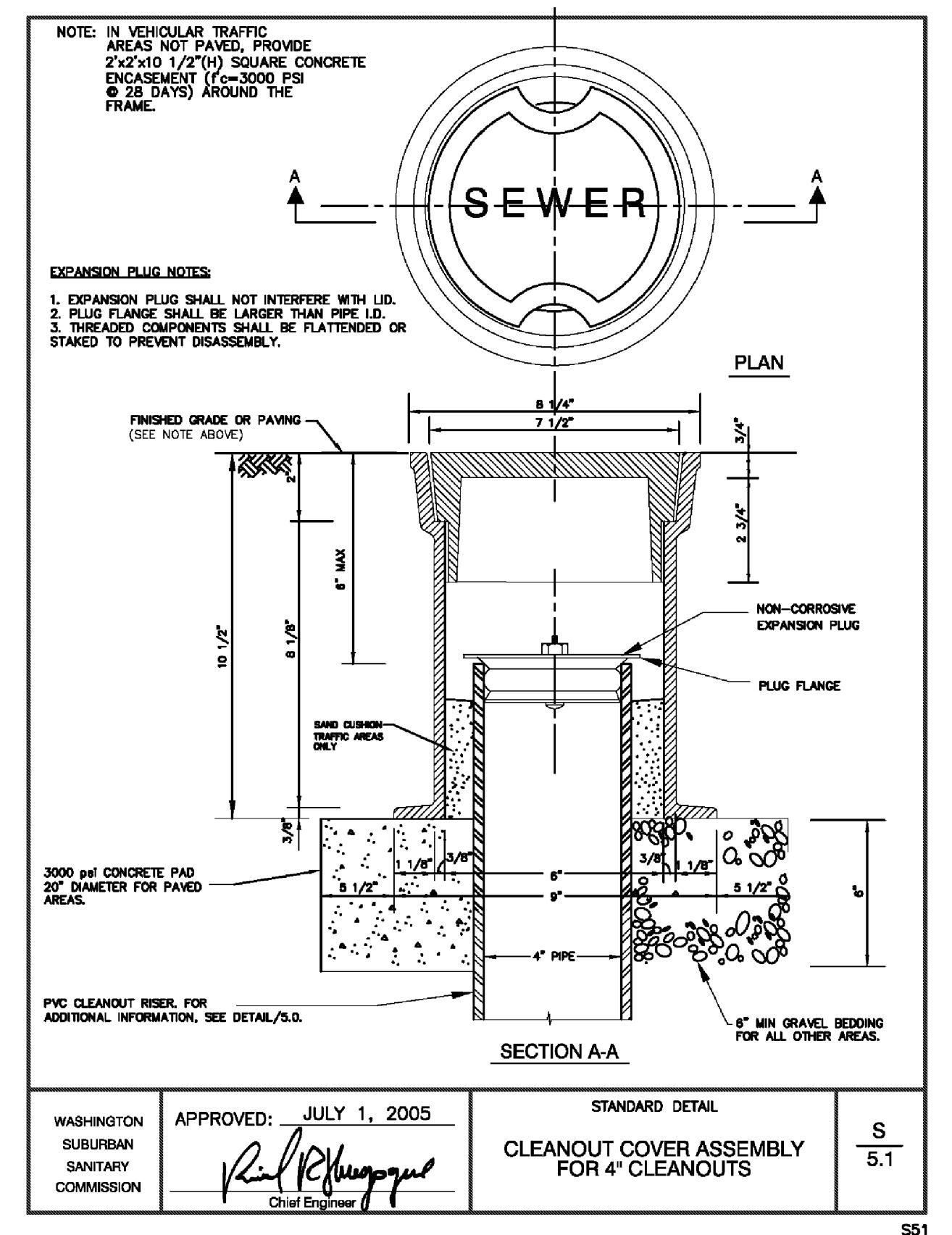
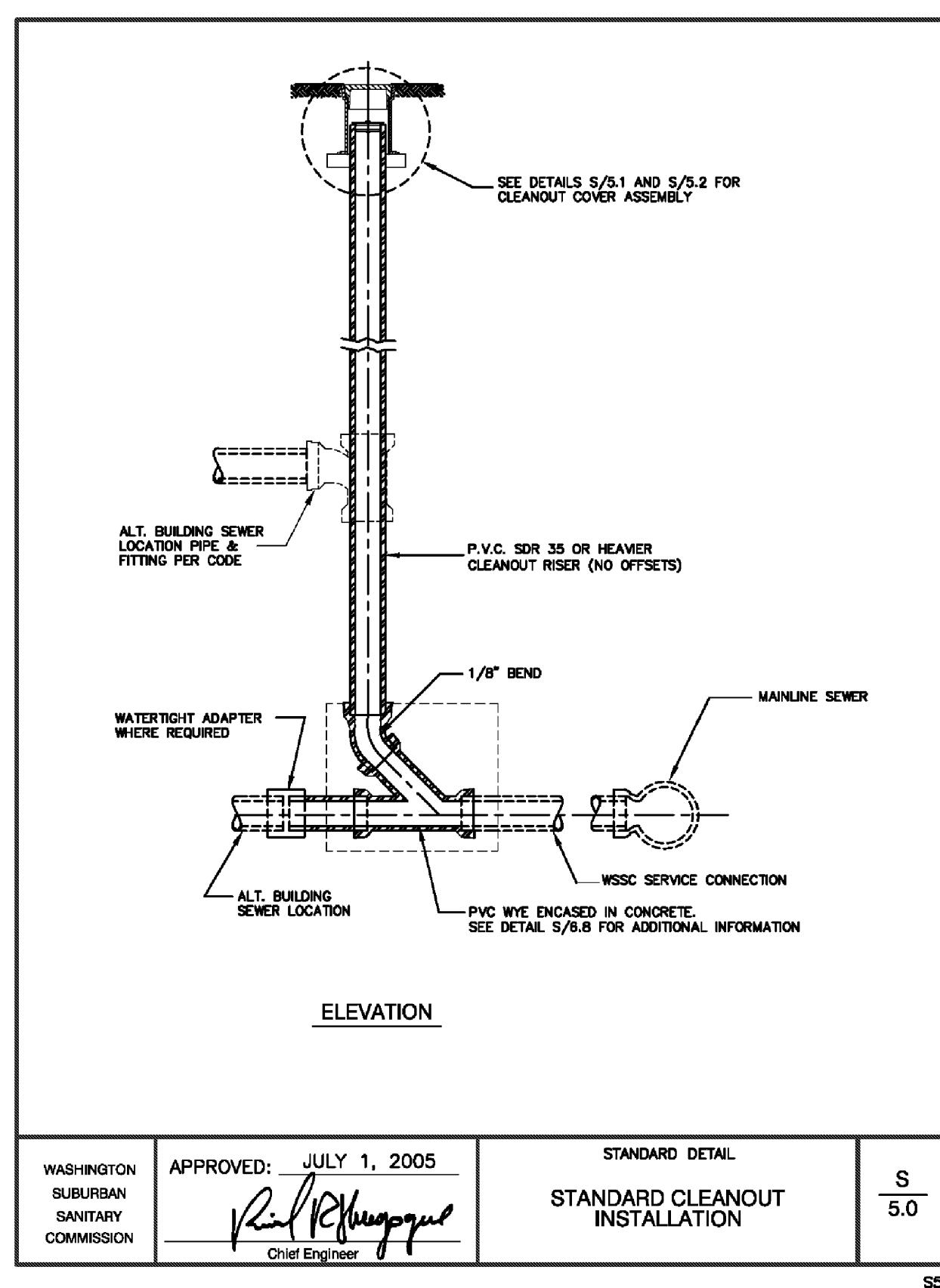
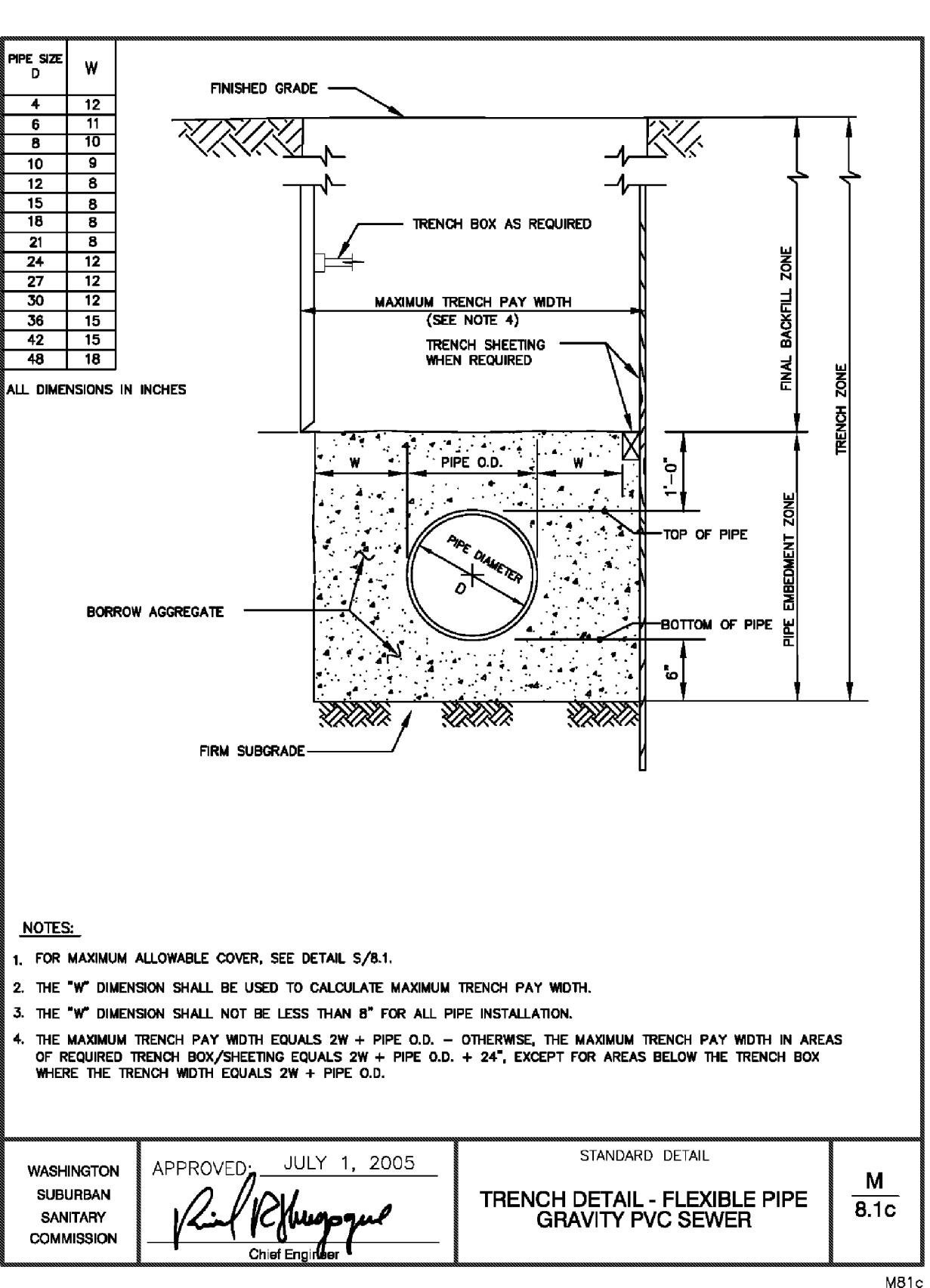
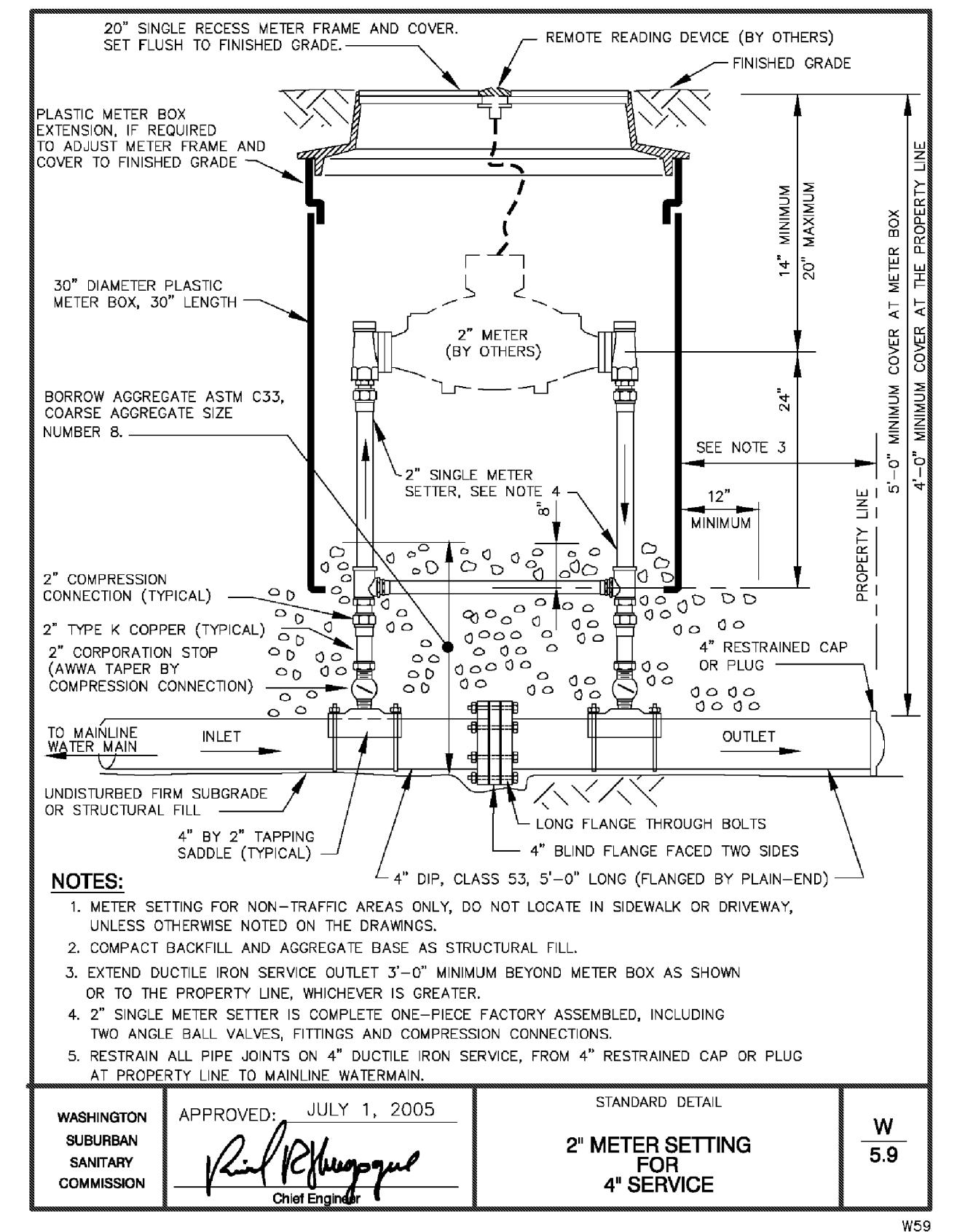
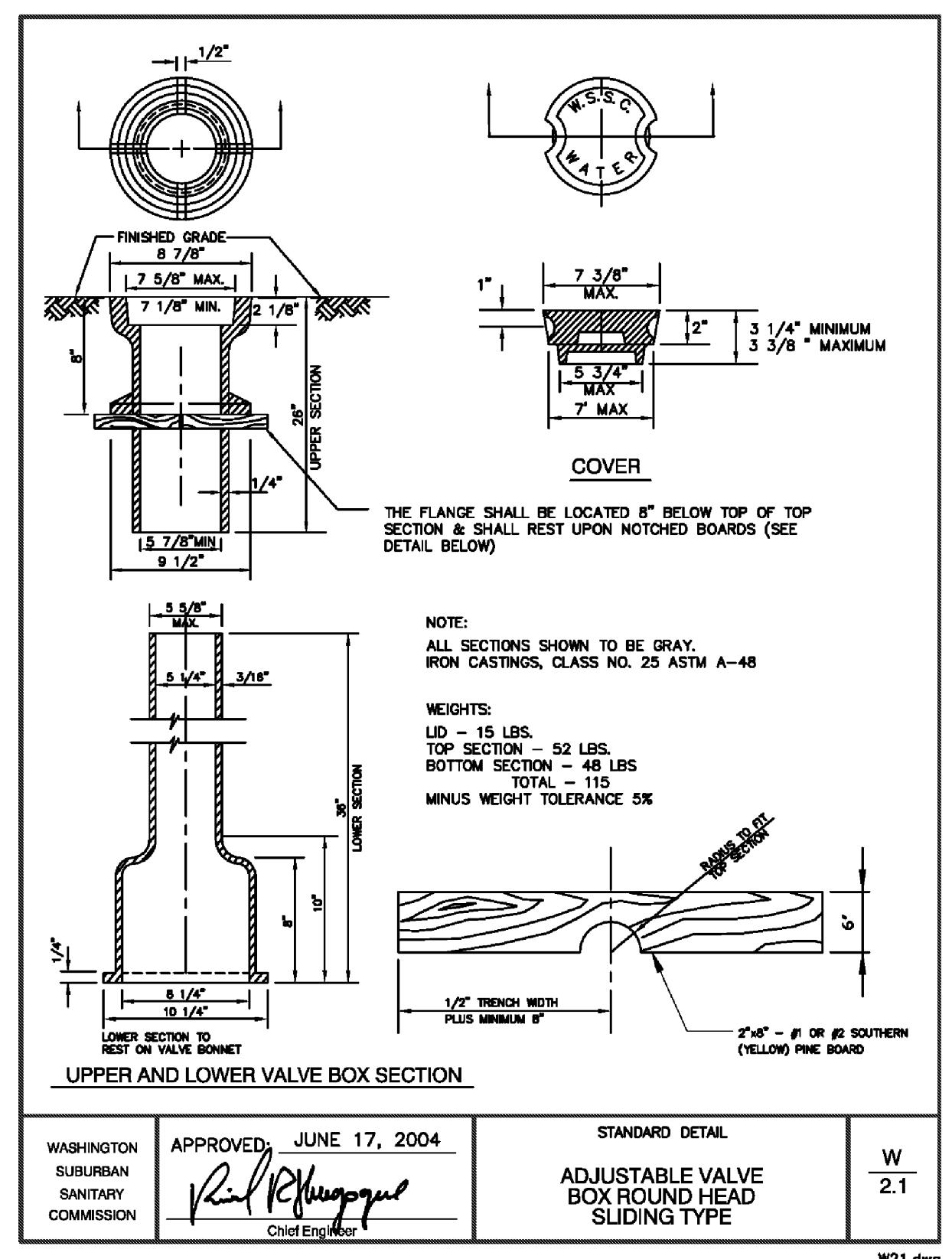
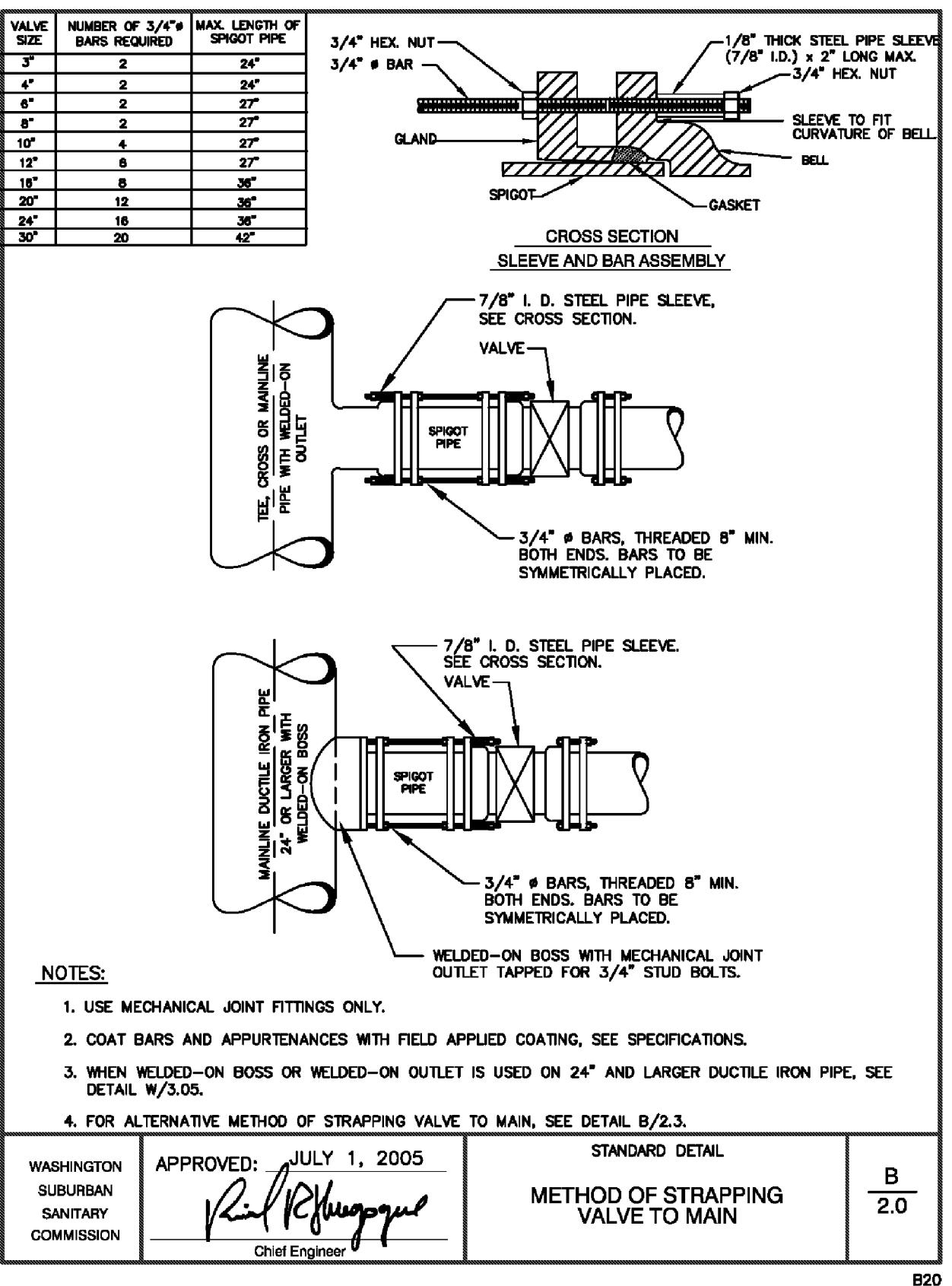
SITE GRADING PLAN



REVISION	DESCRIPTION	BY	DATE
95% CD SET		01/29/10	
100% CD SET		02/24/10	
ISSUED FOR CONSTRUCTION		03/31/10	

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011."



KH KEAST & HOOD CO.
Structural Engineers
1850 M Street NW Washington, DC 20036
(202) 223-1941 Fax (202) 223-1942

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBOOK PARKWAY ROCKVILLE, MD 20852
(301) 681-2545 FAX (301) 681-0814
EMAIL: AMT@AMTENGINEERING.COM

NIST
NORTH

FOR OFFICIAL USE ONLY

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

NET ZERO ENERGY RESIDENTIAL TEST FACILITY

SITE DETAILS

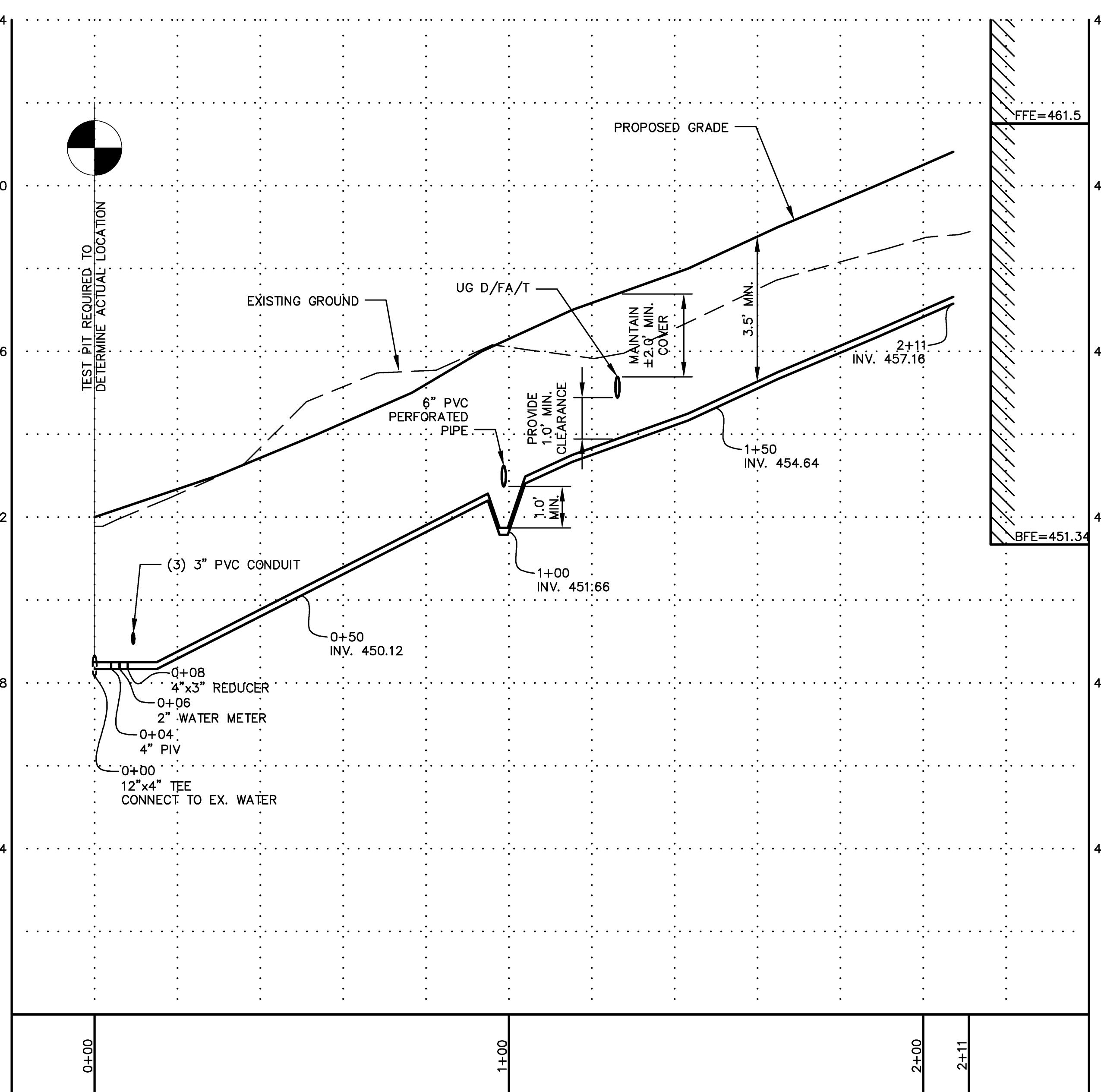
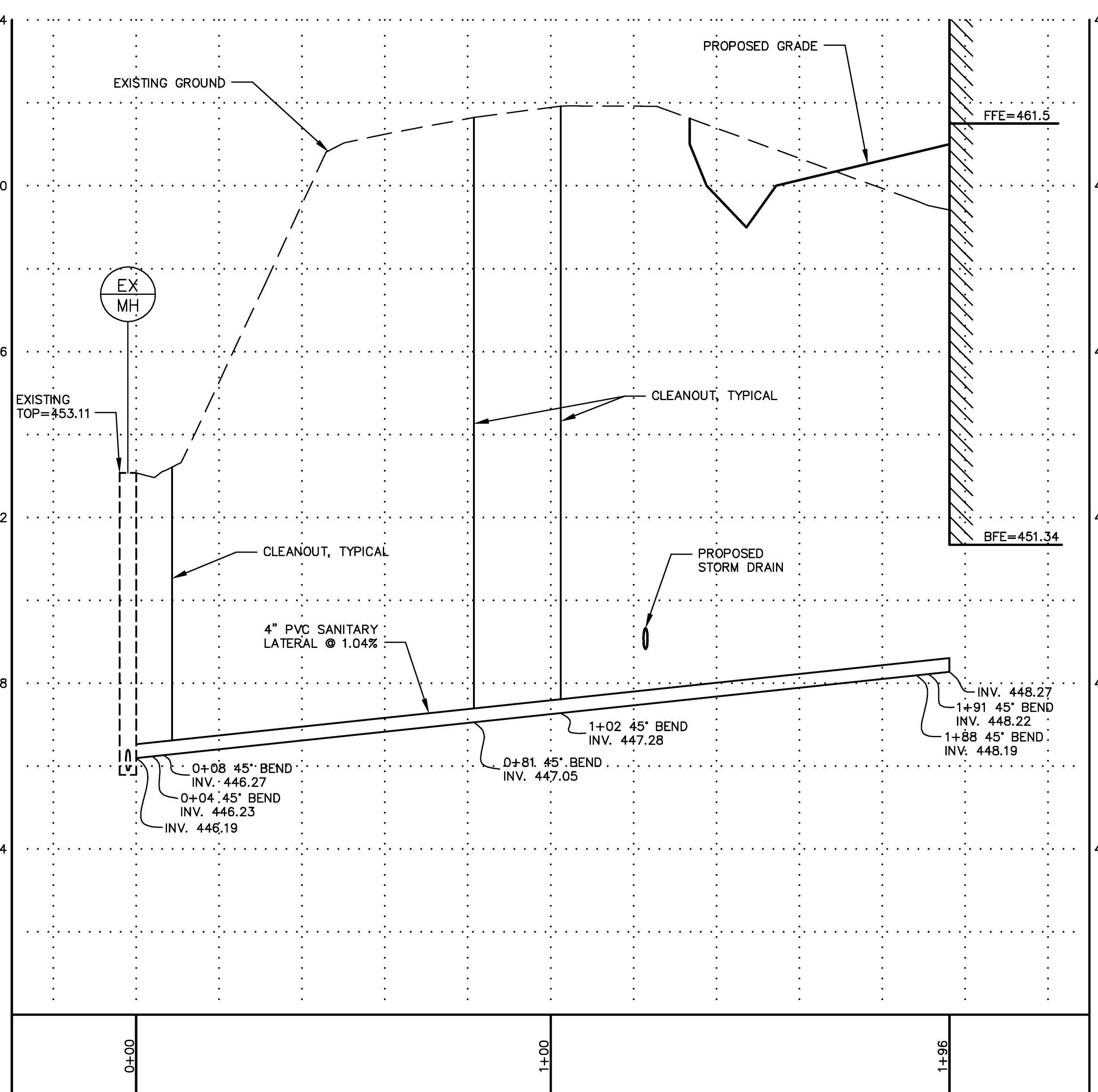
SH.NO. ____ OF ____ DWG. C-203

APPROVED BY DATE SPONSOR DATE MAINTENANCE ENG. OFF. DATE FIRE PROTECTION SVS. DATE S.H. & E. DIV. DATE FACILITIES ENGR. OFF. DATE PROJECT LEADER DATE KS/DN 02/01/10 SBI34109CQ0026/69331 DRAWN BY DATE PROJECT/W.O. DESIGN PROJ. #

REVISION	DESCRIPTION	BY	DATE
	95% CD SET		01/29/10
	100% CD SET		02/24/10
	ISSUED FOR CONSTRUCTION		03/31/10

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011."



KH KEAST & HOOD CO.
Structural Engineers
1850 M Street NW Washington, DC 20036
(202) 223-1941 Fax (202) 223-1942

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBOOK PARKWAY ROCKVILLE, MD 20852
(301) 881-2545 FAX(301) 881-0814
EMAIL: AMT@AMTENGINEERING.COM

NIST
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

FOR OFFICIAL USE ONLY																				
U.S. DEPARTMENT OF COMMERCE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY PLANT DIVISION																				
NET ZERO ENERGY RESIDENTIAL TEST FACILITY																				
UTILITY PROFILES																				
SH.NO.	OF	DWG. C-301																		
APPROVED BY	DATE	SPONSOR	DATE	MAINTENANCE ENG. OFF.	DATE	FIRE PROTECTION SVS.	DATE	S.H. & E. DIV.	DATE	FACILITIES ENGR. OFF.	DATE	PROJECT LEADER	DATE	KS/DN	02/01/10	SBI34109CQ0026/69331	DRAWN BY	DATE	PROJECT/W.O.	DESIGN PROJ. #

REVISION	DESCRIPTION	BY	DATE
	95% CD SET		01/29/10
	100% CD SET		02/24/10
	ISSUED FOR CONSTRUCTION		03/31/10

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011."

LEGEND

- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- [] — CURB INLET PROTECTION

STANDARD STABILIZATION NOTE

"Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within (7) days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1) and fourteen days (14) as to all other disturbed or graded areas on the project site."

OWNER'S/DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION, AND OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF AFFIDAVIT FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVING MAINTAINING PROPER SITES OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON SITE EVALUATION BY THE STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE INSPECTORS."

SIGNATURE _____ DATE _____

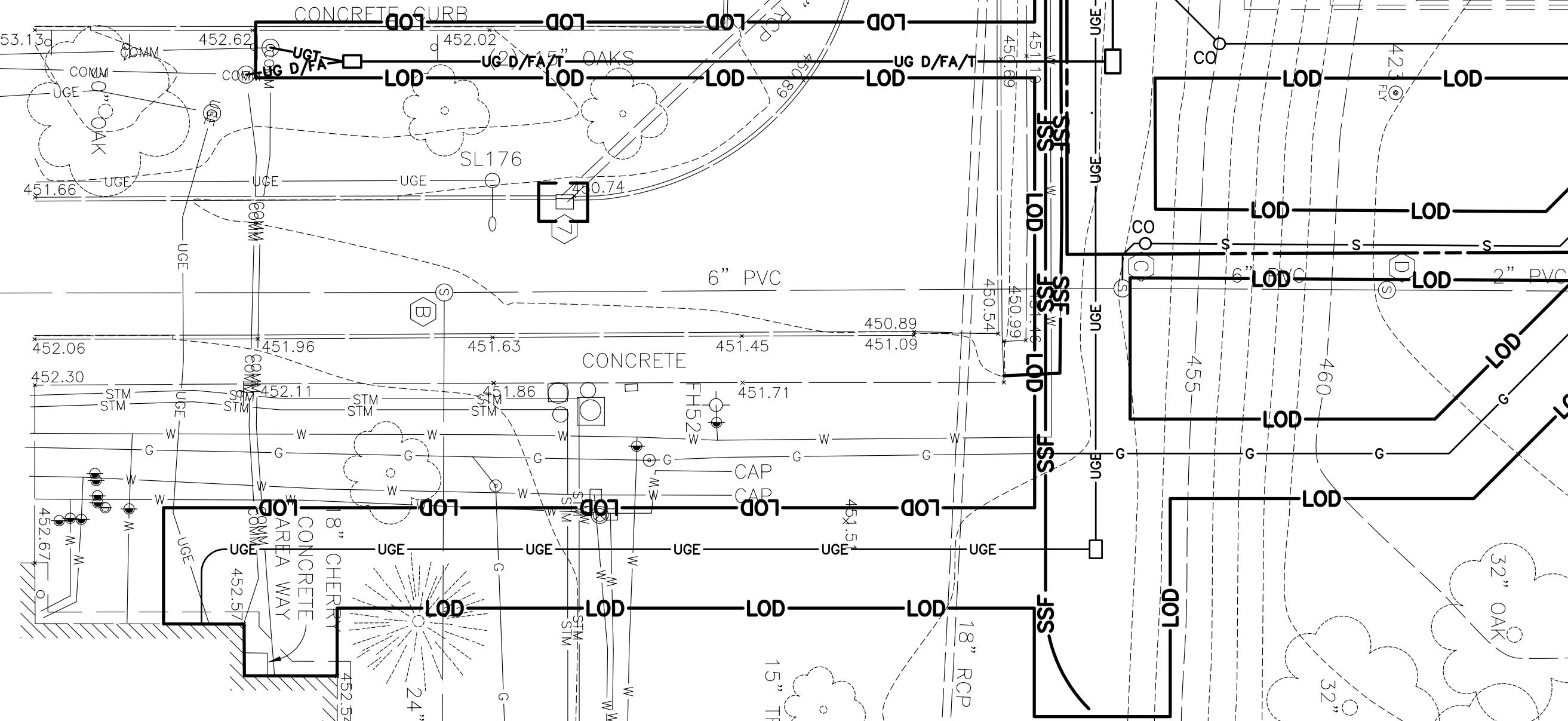
PRINTED NAME AND TITLE _____ REGISTRATION NUMBER _____

DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE "1994 STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL, THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT STORMWATER MANAGEMENT REGULATIONS.

DESIGN ENGINEER SIGNATURE _____ DATE _____

PRINTED NAME _____ REGISTRATION NUMBER _____



THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

APPROVED BY	DATE	SPONSOR	DATE	MAINTENANCE ENG. OFF.	DATE	FIRE PROTECTION SVS.	DATE	S.H. & E. DIV.	DATE	FACILITIES ENGR. OFF.	DATE	PROJECT LEADER	DATE	KS/DN	02/01/10	SB134109CQ0026/69331	DRAWN BY	DATE	PROJECT/W.C.	DESIGN PROJ. #	

SH.NO. ____ OF ____ DWG. C-401

KH KEAST & HOOD CO.
Structural Engineers
1650 M Street NW Washington, DC 20036
(202) 223-1941 Fax (202) 223-1942

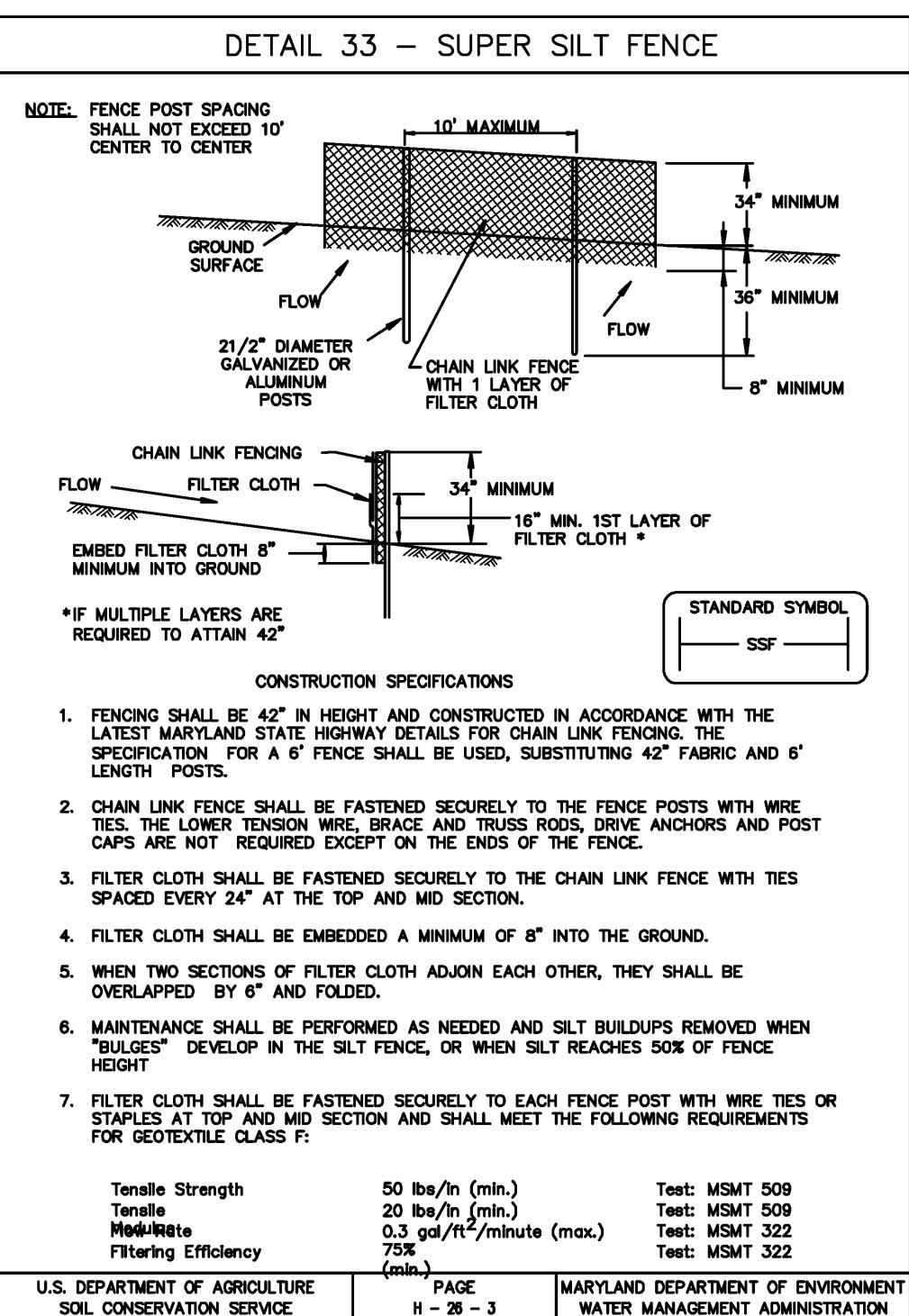
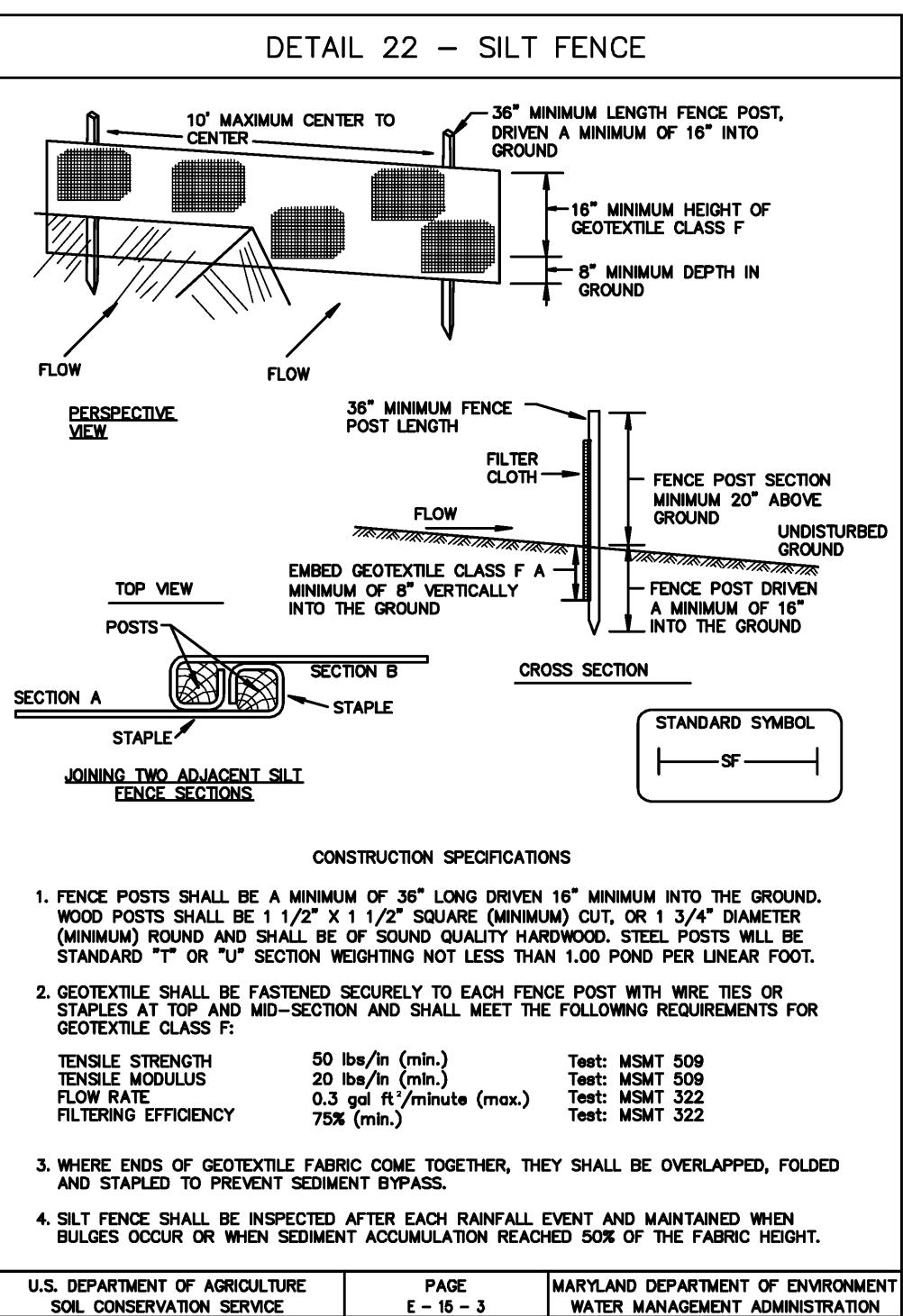
AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBOOK PARKWAY ROCKVILLE, MD 20852
(301) 861-2545 FAX (301) 861-0814
EMAIL: AMT@AMTEENGINEERING.COM

FOR OFFICIAL USE ONLY	
U.S. DEPARTMENT OF COMMERCE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY PLANT DIVISION	
NET ZERO ENERGY RESIDENTIAL TEST FACILITY	
EROSION & SEDIMENT CONTROL PLAN	
DWG. C-401	

REVISION	DESCRIPTION	BY	DATE
95% CD SET		01/29/10	
100% CD SET		02/24/10	
ISSUED FOR CONSTRUCTION		03/31/10	

PROFESSIONAL CERTIFICATION

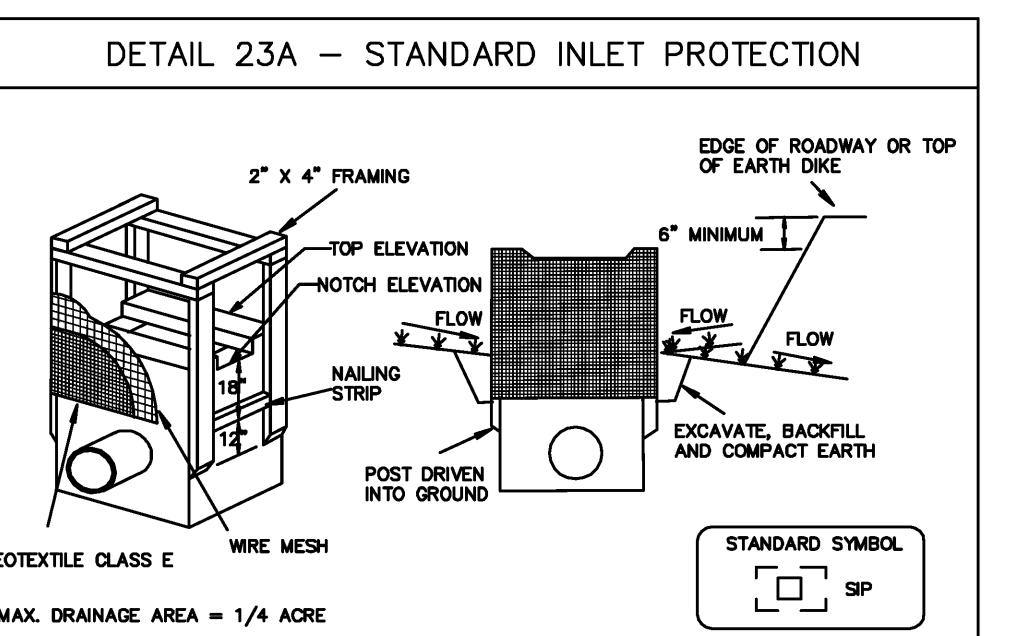
"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011."



SLOPE STEEPNESS	(MAXIMUM) SLOPE LENGTH	(MAXIMUM) SILT FENCE LENGTH
FLATTER THAN 50:1	UNLIMITED	UNLIMITED
50:1 TO 10:1	125 FEET	1,000 FEET
10:1 TO 5:1	100 FEET	750 FEET
5:1 TO 3:1	60 FEET	500 FEET
3:1 TO 2:1	40 FEET	250 FEET
2:1 AND STEEPER	125 FEET	

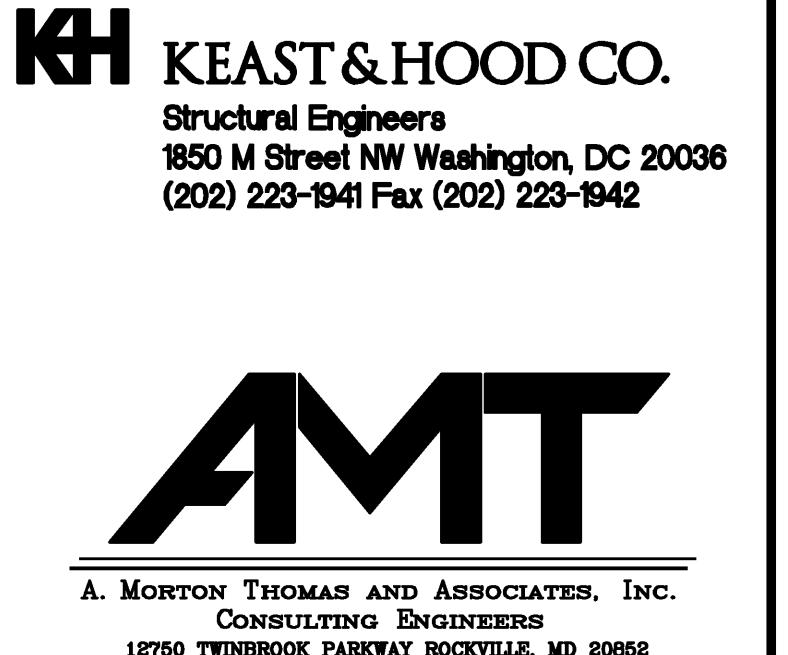
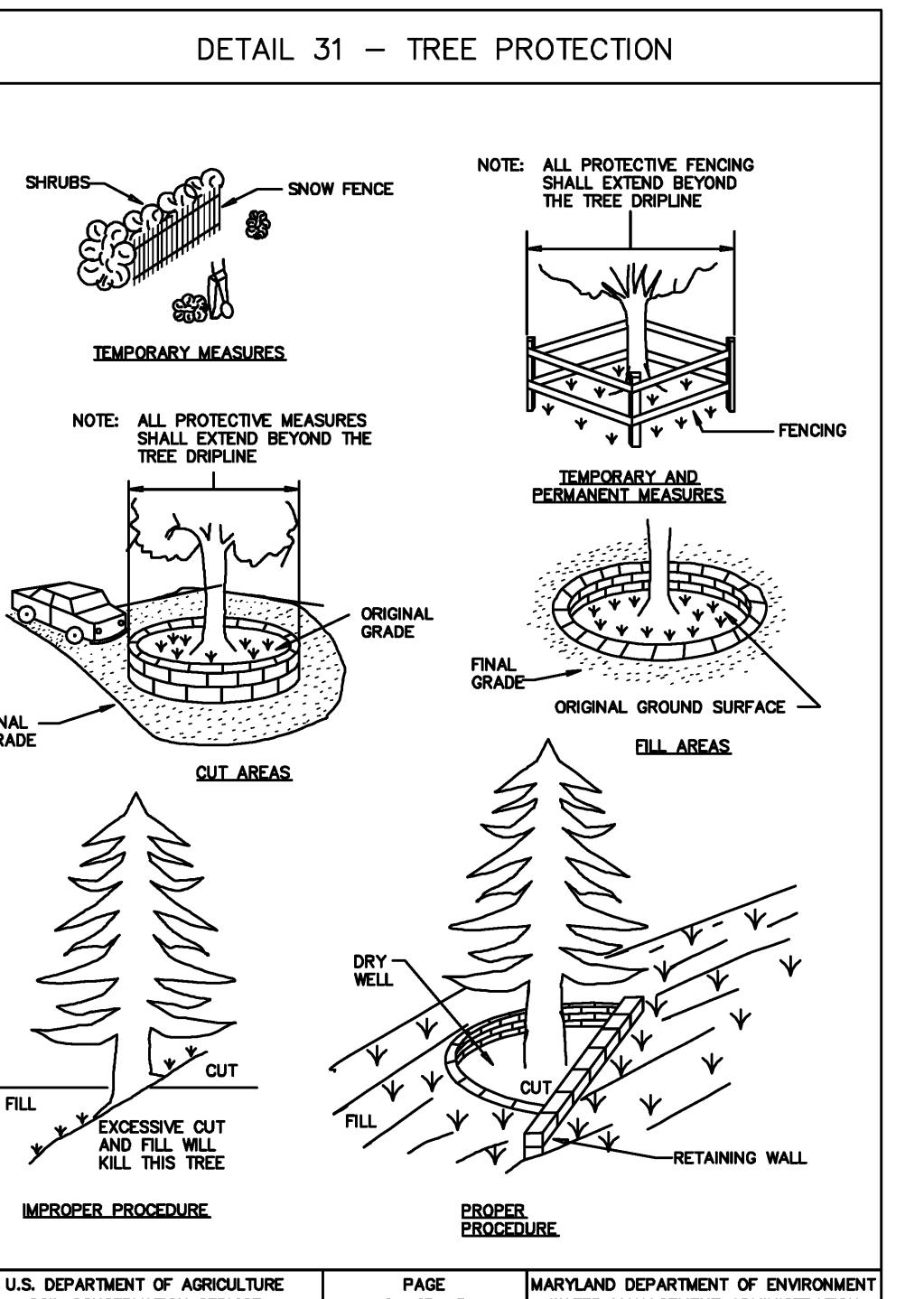
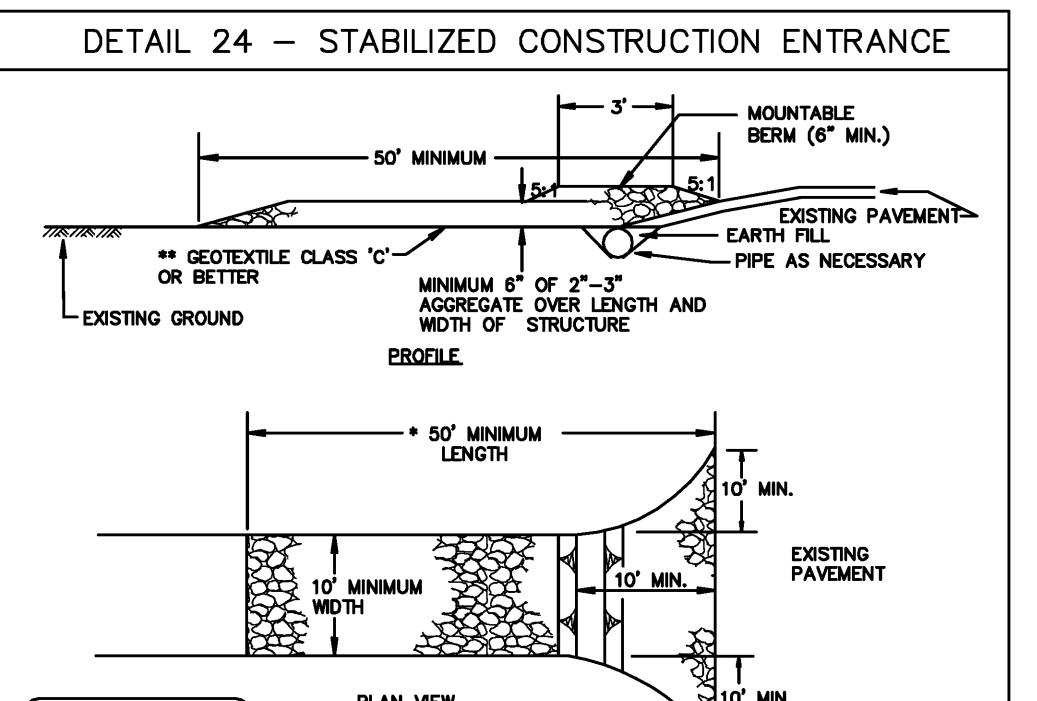
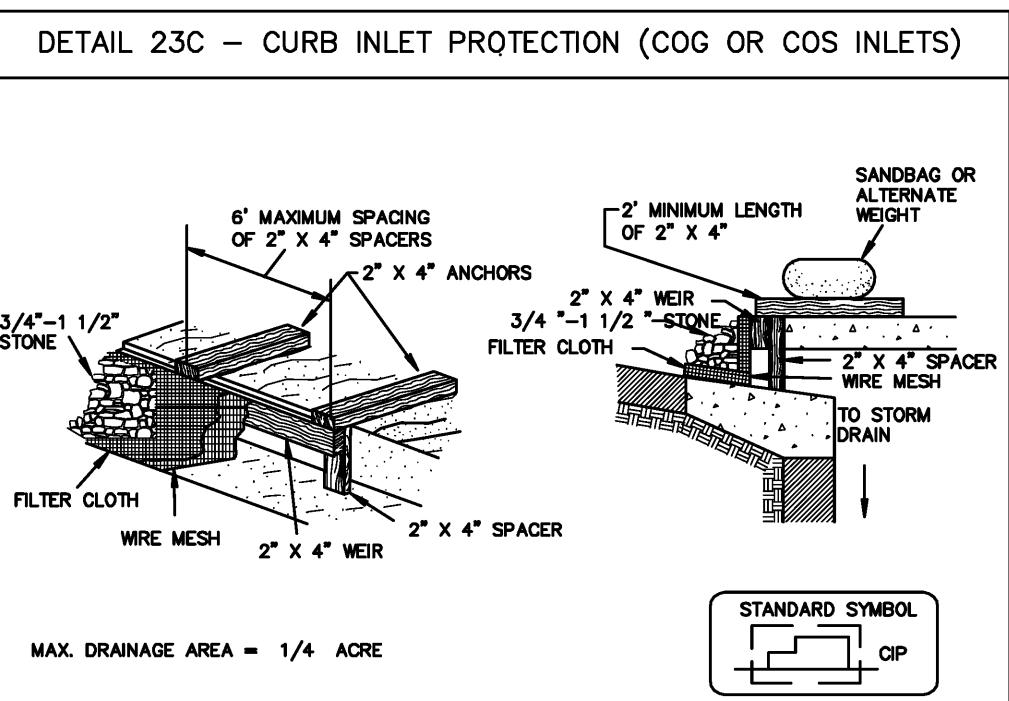
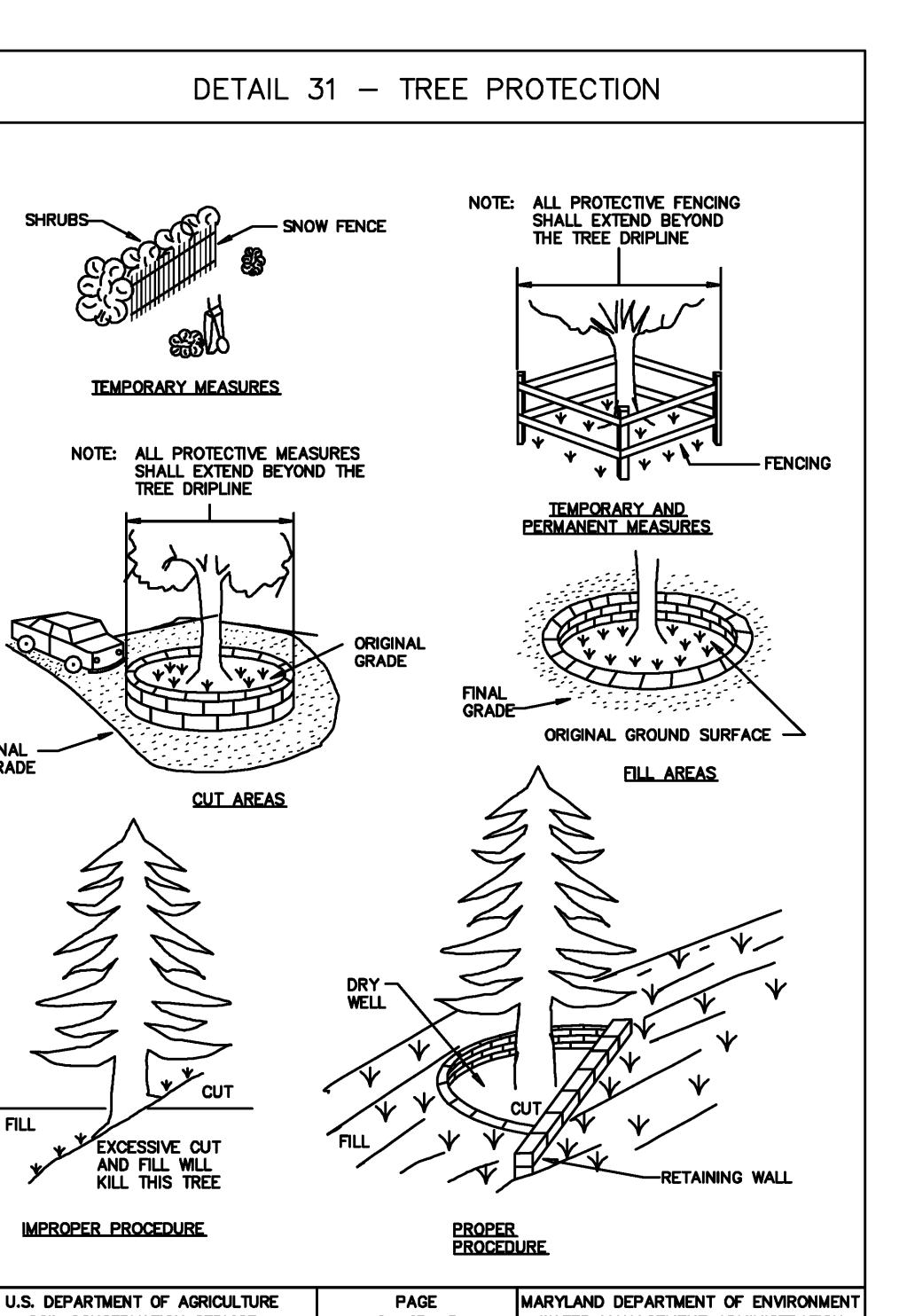
NOTE: IN AREAS OF LESS THAN 2X SLOPE AND SANDY SOILS (USA GENERAL CLASSIFICATION SYSTEM, SOIL CLASS A) MAXIMUM SLOPE LENGTH AND SILT FENCE LENGTH WILL BE UNLIMITED. IN THESE AREAS A SILT FENCE MAY BE THE ONLY PERIMETER CONTROL REQUIRED.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PAGE E - 15 - 3A
MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION



SLOPE	SLOPE STEEPNESS	SLOPE LENGTH (MAXIMUM)	SILT FENCE LENGTH (MAXIMUM)
0 - 10%	0 - 10:1	UNLIMITED	UNLIMITED
10 - 20%	10:1 - 5:1	200 FEET	1,500 FEET
20 - 33%	5:1 - 3:1	100 FEET	1,000 FEET
33 - 50%	3:1 - 2:1	100 FEET	500 FEET
50% +	2:1 +	50 FEET	250 FEET

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PAGE H - 28 - 3
MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION



DWG. C-402

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY. EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.

APPROVED BY _____ DATE _____ SPONSOR _____ DATE _____ MAINTENANCE ENG. OFF. _____ DATE _____ FIRE PROTECTION SVS. _____ DATE _____ S.H. & E. DIV. _____ DATE _____ FACILITIES ENGR. OFF. _____ DATE _____ PROJECT LEADER _____ DATE _____ KS/DN _____ DATE _____ DRAWN BY _____ DATE _____ PROJECT/W.O. _____ DESIGN PROJ. # _____

STANDARD EROSION AND SEDIMENT CONTROL NOTES

THE WATER MANAGEMENT ADMINISTRATION REQUIRES THAT THESE NOTES, IN THEIR ENTIRETY, BE INCLUDED ON THE EROSION AND SEDIMENT CONTROL PLAN. IT IS RECOGNIZED THAT EVERY NOTE MAY NOT APPLY TO ALL PROJECTS. THE REQUIREMENT OF ANY INDIVIDUAL NOTE NOT APPLICABLE TO THE SUBJECT PROJECT IS NOT BINDING UPON THE APPLICANT OR THE APPLICANT'S CONTRACTOR.

1. THE CONTRACTOR SHALL NOTIFY THE ADMINISTRATION (WMA) AT (410) 537-3510 SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND, UNLESS WAIVED BY THE ADMINISTRATION, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF WMA.
 2. THE CONTRACTOR MUST NOTIFY WMA IN WRITING AND BY TELEPHONE AT THE FOLLOWING POINTS:
 - A. THE REQUIRED PRE-CONSTRUCTION MEETING.
 - B. FOLLOWING INSTALLATION OF SEDIMENT CONTROL MEASURES.
 - C. DURING THE INSTALLATION OF SEDIMENT BASINS (TO BE CONVERTED INTO PERMANENT STORMWATER MANAGEMENT STRUCTURES) AT THE REQUIRED INSPECTION POINTS (SEE INSPECTION CHECKLIST ON PLAN). NOTIFICATION PRIOR TO COMMENCING CONSTRUCTION OF EACH STEP IS MANDATORY.
 - D. PRIOR TO REMOVAL OR MODIFICATION OF ANY SEDIMENT CONTROL STRUCTURE(S).
 - E. PRIOR TO REMOVAL OF ALL SEDIMENT CONTROL DEVICES.
 - F. PRIOR TO FINAL ACCEPTANCE.
 3. THE CONTRACTOR SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLAN AND CONSTRUCTION SEQUENCE AND SHALL HAVE THEM INSPECTED AND APPROVED BY THE AGENCY INSPECTOR OR WMA INSPECTOR PRIOR TO BEGINNING ANY OTHER LAND DISTURBANCES. MINOR SEDIMENT CONTROL DEVICE LOCATION ADJUSTMENTS MAY BE MADE IN THE FIELD WITH THE APPROVAL OF THE WMA INSPECTOR. THE CONTRACTOR SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR PERMISSION FROM WMA INSPECTOR AND AGENCY INSPECTOR. THE CONTRACTOR MUST OBTAIN PRIOR AGENCY AND WMA APPROVAL FOR CHANGES TO THE SEDIMENT CONTROL PLAN AND / OR SEQUENCE OF CONSTRUCTION.
 4. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.
 5. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIMES AS THEY ARE REMOVED WITH PRIOR PERMISSION FROM WMA INSPECTOR AND AGENCY INSPECTOR.
 6. ALL SEDIMENT BASINS, TRAP EMBANKMENTS, PERIMETER DIKES, SWALES AND ALL DISTURBED SLOPES STEEPER OR EQUAL TO 3:1 SHALL BE STABILIZED WITH SOD OR SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES, AS SOON AS POSSIBLE BUT NO LATER THAN SEVEN (7) CALENDAR DAYS AFTER ESTABLISHMENT. ALL AREAS DISTURBED OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST BE MINIMIZED. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. (REQUIREMENT FOR STABILIZATION MAY BE REDUCED TO THREE (3) DAYS FOR SENSITIVE AREAS.)
 7. THE CONTRACTOR SHALL APPLY SOD OR SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES TO ALL DISTURBED AREAS AND STOCKPILES WITHIN FOURTEEN (14) CALENDAR DAYS AFTER STRIPPING AND GRADING ACTIVITIES HAVE CEASED IN THE AREA. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. (REQUIREMENT MAY BE REDUCED TO SEVEN (7) DAYS FOR SENSITIVE AREAS)
 8. PRIOR TO REMOVAL OF SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL STABILIZE AND HAVE ESTABLISHED PERMANENT STABILIZATION FOR ALL CONTRIBUTORY DISTURBED AREAS USING SOD OR AN APPROVED PERMANENT SEED MIXTURE WITH REQUIRED SOIL AMENDMENTS AND AN APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHERE THE SLOPE DOES NOT EXCEED 10% AND GRADING HAS BEEN DONE TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE, BUT NOT LATER THAN FOURTEEN (14) CALENDAR DAYS AFTER ESTABLISHMENT. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE MONTHS OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, TEMPORARY SEED AND ANCHORED STRAW MULCH SHALL BE APPLIED TO DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY MARCH 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.
 9. THE SITE'S APPROVAL LETTER, APPROVED EROSION AND SEDIMENT CONTROL PLANS, DAILY LOG BOOKS, AND TEST REPORTS SHALL BE AVAILABLE AT THE SITE FOR INSPECTION BY DULY AUTHORIZED OFFICIALS OF WMA AND THE AGENCY RESPONSIBLE FOR PROJECT.
 10. SURFACE DRAINAGE FLOWS OVER UNSTABILIZED CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO LOWER THE WATER DOWNSLIDE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT THE TOP OF A CUT OR FILL SLOPE UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED, AT WHICH TIME THEY MUST BE REMOVED AND FINAL GRADING DONE TO PROMOTE SHEET FLOW DRAINAGE. PROTECTIVE METHODS MUST BE PROVIDED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.
 11. PERMANENT SWALES OR OTHER POINTS OF CONCENTRATED WATER FLOW SHALL BE STABILIZED WITH SOD OR SEED WITH AN APPROVED EROSION CONTROL MATTING, RIP-RAP, OR BY OTHER APPROVED STABILIZATION MEASURES.
 12. TEMPORARY SEDIMENT CONTROL DEVICES MAY BE REMOVED, WITH PERMISSION OF WMA INSPECTOR AND AGENCY INSPECTORS, WITHIN THIRTY (30) CALENDAR DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTORY DRAINAGE AREAS. STORMWATER MANAGEMENT STRUCTURES USED TEMPORARILY FOR SEDIMENT CONTROL SHALL BE CONVERTED TO THE PERMANENT CONFIGURATION WITHIN THIS TIME PERIOD AS WELL.
 13. NO PERMANENT CUT OR FILL SLOPE WITH A GRADIENT STEEPER THAN 3:1 WILL BE PERMITTED IN LAWN MAINTENANCE AREAS. A SLOPE GRADIENT OF UP TO 2:1 WILL BE PERMITTED IN NONMAINTENANCE AREAS PROVIDED THAT THOSE AREAS ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN WITH A LOW-MAINTENANCE GROUND COVER SPECIFIED FOR PERMANENT STABILIZATION. SLOPE GRADIENT STEEPER THAN 2:1 WILL NOT BE PERMITTED WITH VEGETATIVE STABILIZATION.
 14. FOR FINISHED GRADING, THE CONTRACTOR SHALL PROVIDE ADEQUATE GRADIENTS TO PREVENT WATER FROM PONDING FOR MORE THAN TWENTY FOUR (24) HOURS AFTER THE END OF A RAINFALL EVENT. DRAINAGE COURSES AND SWALE FLOW AREAS MAY TAKE AS LONG AS FORTY-EIGHT (48) HOURS AFTER THE END OF A RAINFALL EVENT TO DRAIN. AREAS DESIGNED TO HAVE STANDING WATER SHALL NOT BE REQUIRED TO MEET THIS REQUIREMENT.
 15. SEDIMENT TRAPS OR BASINS ARE NOT PERMITTED WITHIN 20 FEET OF A FOUNDATION THAT EXISTS OR IS UNDER CONSTRUCTION. NO STRUCTURE MAY BE CONSTRUCTED WITHIN 20 FEET OF AN ACTIVE SEDIMENT TRAP OR BASIN.
 16. THE WMA INSPECTOR HAS THE OPTION OF REQUIRING ADDITIONAL SAFETY OR SEDIMENT CONTROL MEASURES, IF DEEMED NECESSARY.
 17. ALL TRAP DEPTH DIMENSIONS ARE RELATIVE TO THE OUTLET ELEVATION. ALL TRAPS MUST HAVE A STABLE OUTFALL. ALL TRAPS AND BASINS SHALL HAVE STABLE INFLOW POINTS.
 18. VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. REFER TO APPROPRIATE SPECIFICATIONS FOR TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, SODDING, AND GROUND COVERS.
 19. SEDIMENT SHALL BE REMOVED AND THE TRAP OR BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE QUARTER OF THE TOTAL DEPTH OF THE TRAP OR BASIN. TOTAL DEPTH SHALL BE MEASURED FROM THE TRAP OR BASIN BOTTOM TO THE CREST OF THE OUTLET.
 20. SEDIMENT REMOVED FROM TRAPS (AND BASINS) SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN, WETLAND OR TREE-SAVE AREA. WHEN PUMPING SEDIMENT-LADEN WATER, THE DISCHARGE MUST BE DIRECTED TO A SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE FROM THE SITE. A SUMP PIT MAY BE USED IF SEDIMENT TRAPS THEMSELVES ARE BEING PUMPED OUT.
 21. ALL WATER REMOVED FROM EXCAVATED AREAS SHALL BE PASSED THROUGH A WMA APPROVED DEWATERING PRACTICE OR PUMPED TO A SEDIMENT TRAP OR BASIN PRIOR TO DISCHARGE TO A FUNCTIONAL STORM DRAIN SYSTEM OR TO STABLE GROUND SURFACE.
 22. SEDIMENT CONTROL FOR UTILITY CONSTRUCTION FOR AREAS OUTSIDE OF DESIGNED CONTROLS OR AS DIRECTED BY ENGINEER OR WMA INSPECTOR:
 - A. CALL "MISS UTILITY" AT 1-800-257-7777 48 HOURS PRIOR TO THE START OF WORK.
 - B. EXCAVATED TRENCH MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
 - C. TRENCHES FOR UTILITY INSTALLATION SHALL BE BACKFILLED, COMPAKTED, AND STABILIZED AT THE END OF EACH WORKING DAY. NO MORE TRENCH SHALL BE OPENED THAN CAN BE COMPLETED THAT SAME DAY, UNLESS:
 - D. TEMPORARY SILT FENCE SHALL BE PLACED IMMEDIATELY DOWNSTREAM OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED FOR MORE THAN ONE DAY.
 23. WHERE DEEMED APPROPRIATE BY THE ENGINEER OR INSPECTOR, SEDIMENT BASINS AND TRAPS MAY NEED TO BE SURROUNDED WITH AN APPROVED SAFETY FENCE. THE FENCE MUST CONFORM TO LOCAL ORDINANCES AND REGULATIONS. THE DEVELOPER OR OWNER SHALL CHECK WITH LOCAL BUILDING OFFICIALS ON APPLICABLE SAFETY REQUIREMENTS. WHERE SAFETY FENCE IS DEEMED APPROPRIATE AND LOCAL ORDINANCES DO NOT SPECIFY FENCING SIZES AND TYPES, THE FOLLOWING SHALL BE USED AS A MINIMUM STANDARD: THE SAFETY FENCE MUST BE MADE OF WELDED WIRE AND AT LEAST 42 INCHES HIGH, HAVE POSTS SPACED NO FARTHER APART THAN 8 FEET, HAVE MESH OPENINGS NO GREATER THAN 2 INCHES IN WIDTH AND 4 INCHES IN HEIGHT WITH A MINIMUM OF 14 GAUGE WIRE. SAFETY FENCE MUST BE MAINTAINED AND IN GOOD CONDITION AT ALL TIMES.
 24. OFF-SITE SPOIL OR BORROW AREAS ON STATE OR FEDERAL PROPERTY MUST HAVE PRIOR APPROVAL BY WMA AND OTHER APPLICABLE STATE, FEDERAL, AND LOCAL AGENCIES; OTHERWISE APPROVAL MUST BE GRANTED BY THE LOCAL AUTHORITIES. ALL WASTE AND BORROW AREAS OFF-SITE MUST BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.
 25. SITES WHERE INFILTRATION DEVICES ARE USED FOR THE CONTROL OF STORMWATER, EXTREME CARE MUST BE TAKEN TO PREVENT RUNOFF FROM UNSTABILIZED AREAS FROM ENTERING THE STRUCTURE DURING CONSTRUCTION. SEDIMENT CONTROL DEVICES PLACED IN INFILTRATION AREAS MUST HAVE BOTTOM ELEVATIONS AT LEAST TWO (2) FEET HIGHER THAN THE FINISH GRADE BOTTOM ELEVATION OF THE INFILTRATION PRACTICE. WHEN CONVERTING A SEDIMENT TRAP TO AN INFILTRATION DEVICE, ALL ACCUMULATED SEDIMENT MUST BE REMOVED AND DISPOSED OF PRIOR TO FINAL GRADING OF INFILTRATION DEVICE.
 26. WHEN A STORM DRAIN SYSTEM OUTFALL IS DIRECTED TO A SEDIMENT TRAP OR SEDIMENT BASIN AND THE SYSTEM IS TO BE USED FOR TEMPORARILY CONVEYING SEDIMENT-LADEN WATER, ALL STORM DRAIN INLETS IN NON-SUMP AREAS SHALL HAVE TEMPORARY ASPHALT BERMS CONSTRUCTED AT THE TIME OF BASE PAVING TO DIRECT GUTTER FLOW INTO THE INLETS TO AVOID SURCHARGING AND OVERFLOW OF INLETS IN SUMP AREAS.
 27. SITE INFORMATION:
 - A. TOTAL AREA OF FACILITY (BASE, CAMPUS, PARK, ETC.) 578+ ACRES
 - B. TOTAL AREA OF PROJECT SITE 578 ACRES
 - C. AREA DISTURBED 1.5 ACRES
 - D. AREA TO BE ROOFED OR PAVED .16 ACRES (SOLAR PANELS)
 - E. TOTAL CUT 2,000 CUBIC YARDS
 - F. TOTAL FILL 2,000 CUBIC YARDS
 - G. OFF-SITE WASTE / BORROW AREA LOCATION TO BE DETERMINED BY CONTRACTOR
- NOTE:**
1. EARTHWORK QUANTITIES SHOWN HERE ON ARE APPROXIMATE AND ARE FOR THE REVIEWING AGENCY USE ONLY. THE CONTRACTOR MUST MAKE HIS OWN DETERMINATION OF EARTHWORK QUANTITIES.

NOTE:
THE ABOVE SITE INFORMATION HAS BEEN PROVIDED SOLELY FOR USE BY MDN IN REVIEWING SEDIMENT CONTROL AND IS NOT TO BE RELIED UPON BY ANY CONTRACTOR IN PREPARING BIDS. THE CONTRACTOR SHALL MAKE ITS OWN DETERMINATION OF QUANTITIES, VOLUMES AND/OR AREAS USED IN ESTABLISHING ITS BIDS.

STANDARD STABILIZATION NOTE

"Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within (7) days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1) and fourteen days (14) as to all other disturbed or graded areas on the project site."

EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

1. THE CONTRACTOR SHALL CONDUCT OPERATIONS AND MAINTAIN THE PROJECT SITE AS TO MINIMIZE THE CREATION AND DISPERSION OF DUST. DUST CONTROL SHALL BE USED THROUGHOUT THE WORK AT THE SITE.
2. THE CONTRACTOR MUST PROVIDE CLEAN WATER, FREE FROM SALT, OIL AND OTHER DELETERIOUS MATERIAL TO BE USED FOR ON-SITE DUST CONTROL.
3. THE CONTRACTOR SHALL SUPPLY WATER SPRAYING EQUIPMENT CAPABLE OF ACCESSING ALL WORK AREAS.
4. THE CONTRACTOR SHALL IMPLEMENT STRICT DUST CONTROL MEASURES DURING ACTIVE CONSTRUCTION PERIODS ON-SITE. THESE CONTROL MEASURES WILL GENERALLY CONSIST OF WATER APPLICATIONS THAT SHALL BE APPLIED A MINIMUM OF ONCE PER DAY DURING DRY WEATHER OR MORE OFTEN AS REQUIRED TO PREVENT DUST EMISSIONS.
5. FOR WATER APPLICATION TO UNDISTURBED SOIL SURFACES, THE CONTRACTOR SHALL:
 - A. APPLY WATER WITH EQUIPMENT CONSISTING OF A TANK, SPRAY BAR, PUMP WITH DISCHARGE GAUGE, HOSES AND MIST NOZZLES.
 - B. ARRANGE SPRAY BAR HEIGHT, NOZZLE SPACING AND SPRAY PATTERN TO PROVIDE COMPLETE COVERAGE OF GROUND WITH WATER.
 - C. DISPERSE WATER THROUGH NOZZLES ON SPRAY BAR AT 20 PSI MINIMUM. KEEP AREAS DAMP WITHOUT CREATING NUISANCE CONDITIONS SUCH AS PONDING.
6. FOR WATER APPLICATION TO SOIL SURFACES DURING DEMOLITION AND/OR EXCAVATION, THE CONTRACTOR SHALL:
 - A. APPLY WATER WITH EQUIPMENT CONSISTING OF A TANK, PUMP WITH DISCHARGE GAUGE, HOSES AND MIST NOZZLES.
 - B. LOCATE TANK AND SPRAYING EQUIPMENT SO THAT THE ENTIRE EXCAVATION AREA CAN BE MISTED WITHOUT INTERFERING WITH DEMOLITION AND/OR EXCAVATION EQUIPMENT OR OPERATIONS. KEEP AREAS DAMP WITHOUT CREATING NUISANCE CONDITIONS SUCH AS PONDING.
 - C. APPLY WATER SPRAY IN A MANNER TO PREVENT MOVEMENT OF SPRAY BEYOND THE SITE BOUNDARIES.

REVISION	DESCRIPTION	BY	DATE
95%	CD SET	01/29/10	
100%	CD SET	02/24/10	
ISSUED FOR CONSTRUCTION		03/31/10	

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011.

SECTION I – VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. SITE PREPARATION

- I. INSTALL EROSION AND SEDIMENT CONTROL STRUCTURES (EITHER TEMPORARY OR PERMANENT) SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, BERMS, WATERWAYS, OR SEDIMENT CONTROL BASINS.
- II. PERFORM ALL GRADING OPERATIONS AT RIGHT ANGLES TO THE SLOPE. FINAL GRADING AND SHAPING IS NOT USUALLY NECESSARY FOR TEMPORARY SEEDING.
- III. SCHEDULE REQUIRED SOIL TESTS TO DETERMINE SOIL AMENDMENT COMPOSITION AND APPLICATION RATES FOR SITES HAVING DISTURBED AREA OVER 5 ACRES.

B. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

- I. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OVER 5 ACRES. SOIL ANALYSIS MAY BE PERFORMED BY THE UNIVERSITY OF MARYLAND OR A RECOGNIZED COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSIS.
- II. FERTILIZERS SHALL BE UNIFORM IN COMPOSITION, FREE FLOWING, AND SUITABLE FOR ACCURATE APPLICATION BY APPROVED EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS SHALL BE DELIVERED TO THE SITE, FULLY LABELED ACCORDING TO APPROVED STATE FERTILIZER LAWS AND SHALL BEAR THE NAME, TRADE NAME OR TRADEMARK, AND WARRANTY OF THE PRODUCER.
- III. LIME MATERIALS SHALL BE GROUND LIMESTONE (HYDRATED OR BURNED LIME MAY BE SUBSTITUTED) WHICH CONTAINS AT LEAST 50% TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE SHALL BE GROUND TO SUCH FINENESS THAT AT LEAST 50% WILL PASS THROUGH A #100 MESH SIEVE, AND 98 TO 100% WILL PASS THROUGH A #20 MESH SIEVE.
- IV. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 – 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

C. SEEDBED PREPARATION

I. TEMPORARY SEEDING

- a. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL TO A DEPTH OF 3" TO 5" BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS, CHISEL PLOWS, OR RIPPER MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT SHOULD NOT BE ROLLED OR DRAGGED SMOOTH, BUT LEFT IN THE ROUGHENED CONDITION. SLOPED AREAS (GREATER THAN 3:1) SHOULD BE TRACKED LEAVING THE SURFACE IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
- b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
- c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3" TO 5" OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

II. PERMANENT SEEDING

- a. MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT:
 1. SOIL pH SHALL BE BETWEEN 6.0 AND 7.0.
 2. SOLUBLE SALTS SHALL BE LESS THAN 500 PARTS PER MILLION (PPM).
 3. THE SOIL SHALL CONTAIN LESS THAN 40% CLAY, BUT ENOUGH FINE GRAINED MATERIAL (>30% SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS IF LOVEGRASS OR SEREGIA LESPEDEZA IS TO BE PLANTED, THEN A SANDY SOIL (<30% SILT PLUS CLAY) WOULD BE ACCEPTABLE.
 4. SOIL SHALL CONTAIN 1.5% MINIMUM ORGANIC MATTER BY WEIGHT.
 5. SOIL MUST CONTAIN SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
6. IF THESE CONDITIONS CANNOT BE MET BY SOILS ON SITE, ADDING TOPSOIL IS REQUIRED IN ACCORDANCE WITH SECTION 21 "STANDARD AND SPECIFICATION FOR TOPSOIL" OF THE 1994 MD STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.

III. AREAS PREVIOUSLY GRADED IN CONFORMANCE WITH THE DRAWINGS SHALL BE MAINTAINED IN A TRUE AND EVEN GRADE, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREA AND TO CREATE HORIZONTAL EROSION CHECK SLOTS TO PREVENT TOPSOIL FROM SLIDING DOWN A SLOPE.

IV. APPLY SOIL AMENDMENTS AS PER SOIL TEST OR AS INDICATED IN THE CONTRACT DOCUMENTS.

- d. MIX SOIL AMENDMENTS INTO THE TOP 3 – 5 INCHES OF TOPSOIL BY DISKING OR OTHER SUITABLE MEANS. LAWN AREAS SHOULD BE RAKED TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION, LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE. STEEP SLOPES (STEEPER THAN 3:1) SHOULD BE TRACKED BY A DOZER LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. THE TOP 1 – 3 INCHES OF SOIL SHOULD BE LOOSE AND FRIABLE. SEEDBED LOOSENING MAY NOT BE NECESSARY ON NEWLY DISTURBED AREAS.

D. SEED SPECIFICATIONS

- I. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED SHALL BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED SHALL HAVE BEEN TESTED WITHIN 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON THIS JOB.

NOTE: SEED TAGS SHALL BE MADE AVAILABLE TO THE INSPECTOR TO VERIFY TYPE AND RATE OF SEED USED.

- II. INOCULANTS – THE INOCULANTS FOR TREATING LEGUME SEED IN THE SEED MIXTURES SHALL BE A PURE CULTURE OF NITROGEN-FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS SHALL NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING.

NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANTS AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 – 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE INOC

BIORETENTION CONSTRUCTION SPECIFICATIONS				AB-BUILT DATA FOR FILTERS * TO BE COMPLETED BY THE CERTIFYING ENGINEER								AS-BUILT CERTIFICATION REQUIREMENTS:						
MATERIAL	SPECIFICATION/ TEST METHOD	SIZE	NOTES	TYPE OF FACILITY: BIORETENTION			DESIGN	*AS-BUILT	ONCE CONSTRUCTION IS COMPLETE, AS-BUILT PLAN CERTIFICATION SHALL BE SUBMITTED TO THE ADMINISTRATION BY EITHER A PROFESSIONAL ENGINEER OR PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MARYLAND TO ENSURE THAT CONSTRUCTED STORMWATER MANAGEMENT PRACTICES AND CONVEYANCE SYSTEMS COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE APPROVED PLANS. AT A MINIMUM, AS-BUILT CERTIFICATION SHALL INCLUDE A SET OF DRAWINGS COMPARING THE APPROVED STORMWATER MANAGEMENT PLAN WITH WHAT WAS CONSTRUCTED. THE ADMINISTRATION MAY REQUIRE ADDITIONAL INFORMATION.									
PLANTING SOIL (2.5' TO 4' DEEP)	SAND 30-60% SILT 30-55% CLAY 10-25%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM	FILTER BED AREA (LxW) / SURFACE AREA (SF)			327 SF											
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM	FILTER BED WATER SURFACE ELEVATION			274.43											
PEA GRAVEL DIAPHRAGM AND CURTAIN DRAIN	PEA GRAVEL: ASTM D-448 ORNAMENTAL STONE: WASHED COBBLES	PEA GRAVEL: NO. 6 STONE: 2" TO 5"		FILTER INLET PIPE SIZE / ELEVATION			8" / 275.00											
SAND	CLEAN AASHTO-M-6 OR ASTM-C-33 CONCRETE SAND	0.02" to 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMATIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.	OUTLET PIPE (UNDERDRAIN) SIZE / ELEVATION			6" / 270.50											
UNDERDRAIN GRAVEL	AASHTO-M-43	0.25" TO 0.75"	UNDERDRAIN GRAVEL SHALL BE CLEAN WASHED.	BIORETENTION VOLUME			325 CF											
UNDERDRAIN PIPING	F758, TYPE PS 28 OR AASHTO-M-278	6" RIGID SCHEDULE 40 PVC OR SDR35	3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES.	MULCH THICKNESS			3"											
GEOTEXTILE FABRIC	CLASS "C", APPARENT OPENING SIZE (ASTM D-4751), GRAB TENSILE STRENGTH (ASTM D-4632), PUNCTURE RESISTANCE (ASTM D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY.	PLANTING MEDIA THICKNESS			30"											
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3, F'c=3500 PSI AT 28 DAYS, NORMAL WEIGHT, AIR ENTRAINED, REINFORCING TO MEET ASTM 615-60	N/A	ON-SITE TESTING OF POURED IN PLACE CONCRETE REQUIRED. 28-DAY AND STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRECAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND - DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING [H-10 OR H-20]; ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING.	PEA GRAVEL THICKNESS			3"											
				UNDERDRAIN GRAVEL THICKNESS			8"											
				GRAVEL THICKNESS BELOW UNDERDRAIN			6"											
				PROVIDE COMPOSITION CERTIFICATION OF FILTER MEDIA			-											
				VERIFY GEOTEXTILE FABRIC INSTALLATION (SIDES ONLY)			-											
				VERIFY PLANTING (SPECIES, NUMBER AND HEALTH)			-											
				VERIFY PLANTING (SPECIES, NUMBER AND HEALTH)			-											
				DATE AS-BUILT ACCEPTED BY MDE:														
SPECIFICATIONS FOR BIORETENTION												PROFESSIONAL CERTIFICATION						
MAINTENANCE SCHEDULE FOR BIORETENTION												I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011.						
DESCRIPTION		METHOD		FREQUENCY		TIME OF YEAR		1. MATERIAL SPECIFICATIONS THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION AREA ARE DETAILED IN TABLE B.3.2 OF THE 2000 MARYLAND STORMWATER DESIGN MANUAL.										
SOIL								2. PLANTING SOIL THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.										
INSPECT AND REPAIR EROSION		VISUAL		MONTHLY		MONTHLY		3. COMPACTION IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION APPENDIX B.3. CONSTRUCTION SPECIFICATIONS FOR SAND FILTERS, BIORETENTION AND OPEN CHANNELS AREAS ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.										
ORGANIC LAYER		REMULCH ANY VOID AREAS		BY HAND		WHENEVER NEEDED		COMPACTATION CAN BE ALLEViated AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.										
REMOVAL AND REPLACEMENT OF ALL DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT		SEE PLANTING SPECIFICATIONS		TWICE A YEAR		3/15 TO 4/30 AND 10/1 TO 11/30		ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE REQUIRED SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.										
TREAT ALL DISEASED TREES AND SHRUBS		MECHANICAL OR BY HAND		N/A		VARIES, DEPENDS ON INSECT OR DISEASE INFESTATION		WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.										
WATERING OF PLANT MATERIAL SHALL TAKE PLACE AT THE END OF EACH DAY FOR FOURTEEN CONSECUTIVE DAYS AFTER PLANTING HAS BEEN COMPLETED		BY HAND		IMMEDIATELY AFTER PROJECT COMPLETION		N/A		WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.										
WATERING OF PLANT MATERIAL SHALL TAKE PLACE AT THE END OF EACH DAY FOR FOURTEEN CONSECUTIVE DAYS AFTER PLANTING HAS BEEN COMPLETED		BY HAND		IMMEDIATELY AFTER PROJECT COMPLETION		N/A		4. PLANT MATERIAL RECOMMENDED PLANT MATERIAL FOR BIORETENTION AREAS CAN BE FOUND IN APPENDIX A, SECTION A.2.3.										
REPLACE STAKES AFTER ONE YEAR		BY HAND		ONCE A YEAR		ONLY REMOVE STAKES IN THE SPRING		5. PLANT INSTALLATION MULCH SHOULD BE PLACED TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.										
REPLACE ANY DEFICIENT STAKES OR WIRES		BY HAND		N/A		WHENEVER NEEDED		ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHOULD BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.										
EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.												THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.						
												MDE # 10-SF-0096						
APPROVED BY	DATE	SPONSOR	DATE	MAINTENANCE ENG. OFF.	DATE	FIRE PROTECTION SVS.	DATE	S.H. & E. DIV.	DATE	FACILITIES ENGR. OFF.	DATE	PROJECT LEADER	DATE	KS/DN	02/01/10	SBI34109CQ0026/69331	PROJECT/W.O.	DESIGN PROJ. #
																	SH.NO. _____ OF _____	DWG. C-404

REVISION	DESCRIPTION	BY	DATE
	95% CD SET		01/29/10
	100% CD SET		02/24/10
	ISSUED FOR CONSTRUCTION		03/31/10

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12564, EXPIRATION DATE 08/10/2011.

FILTERING SYSTEMS:
(A) DURING EXCAVATION TO SUBGRADE;
(B) DURING PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS;
(C) DURING PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA;
(D) DURING CONSTRUCTION OF APPURTENANT CONVEYANCE SYSTEMS SUCH AS FLOW DIVERSION STRUCTURES, PRE-FILTERS AND FILTERS, INLETS, OUTLETS, ORIFICES, AND FLOW DISTRIBUTION STRUCTURES; AND
(E) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS
UNDERDRAINS ARE TO BE PLACED ON A 3'-0" WIDE SECTION OF FILTER CLOTH. PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHALL BE CAPPED. THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS
THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

AS BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE STORMWATER MANAGEMENT FACILITY SHOWN ON THE PLANS HAS (HAVE) BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS APPROVED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, EXCEPT AS NOTED IN RED ON THE "AS BUILT" DRAWINGS.

SIGNATURE _____
NAME _____
MARYLAND REGISTRATION NUMBER _____
DATE _____

MDE # ---SF---
MDE No. _____
BIORETENTION _____
FACILITY IDENTIFICATION (NUMBER AND/OR TYPE) _____

"CERTIFY" MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED ON SUFFICIENT AND APPROPRIATE ONSITE INSPECTIONS AND MATERIAL TESTS CONDUCTED DURING CONSTRUCTION.

DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN BEEN DESIGNED IN ACCORDANCE WITH THE 1994 STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL, THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT STORMWATER MANAGEMENT REGULATIONS.

NAME _____
SIGNATURE _____
MARYLAND REGISTRATION NUMBER _____
P.E., R.L.S. OR R.L.A. (IRCLE) _____
DATE _____

KH KEAST & HOOD CO.
Structural Engineers
1850 M Street NW Washington, DC 20036
(202) 223-1941 Fax (202) 223-1942

AMT

A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBOOK PARKWAY ROCKVILLE, MD 20852
(301) 861-2545 FAX(301) 861-0814
EMAIL: AMT@AMTENGINEERING.COM

NIST
NORTH

FOR OFFICIAL USE ONLY

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

NET ZERO ENERGY RESIDENTIAL TEST FACILITY

EROSION & SEDIMENT CONTROL NOTES

SH.NO. _____ OF _____ DWG. C-404

LEGEND

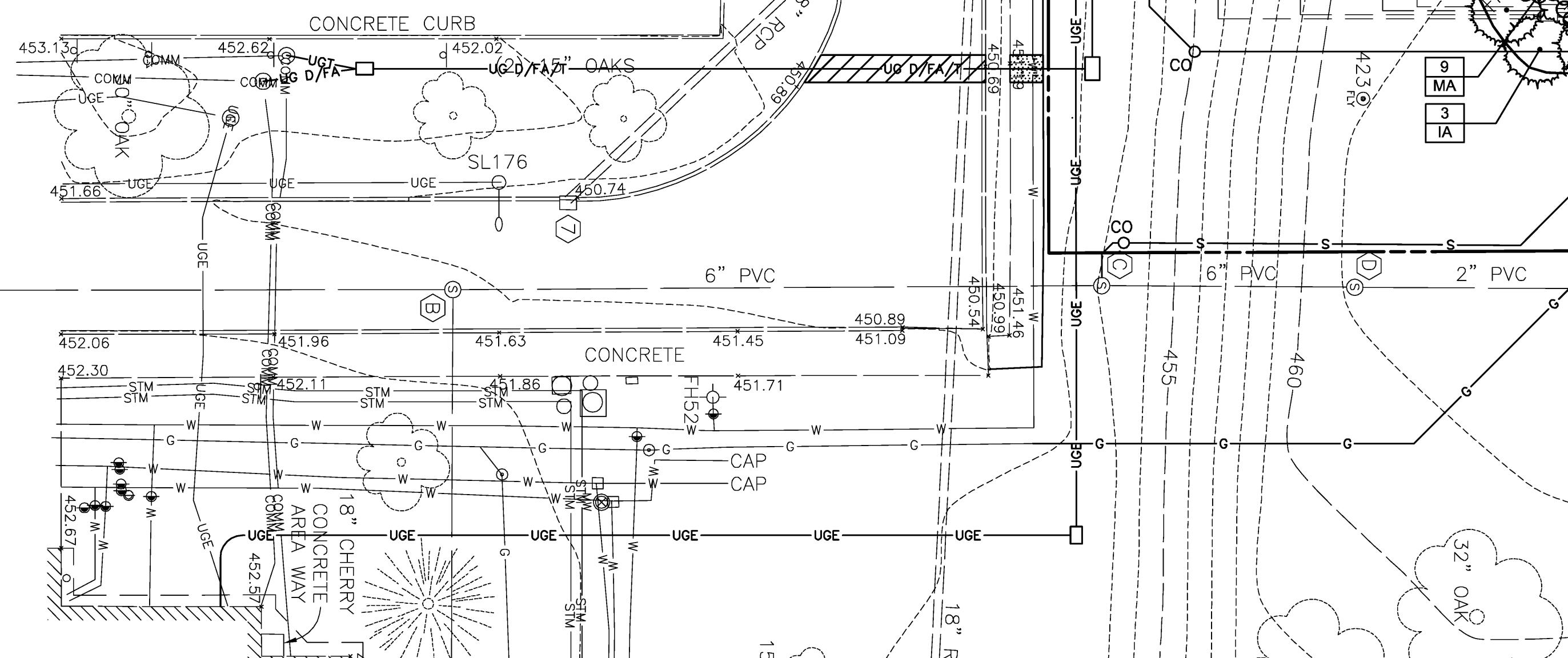
- PROPERTY LINE
- PROPOSED CONTOUR MAJOR
- PROPOSED CONTOUR MINOR
- PROPOSED GEOTHERMAL
- PROPOSED WATER
- PROPOSED SANITARY SEWER
- PROPOSED UNDER GROUND ELECTRIC
- PROPOSED UNDER GROUND DATA/FIRE ALARM/TELEPHONE
- PROPOSED UNDER GROUND DATA/FIRE ALARM
- PROPOSED UNDER GROUND TELECOMMUNICATIONS
- PROPOSED GAS
- HANDBOX
- LIMIT OF NEW ASPHALT
- PLANTING BED EDGE

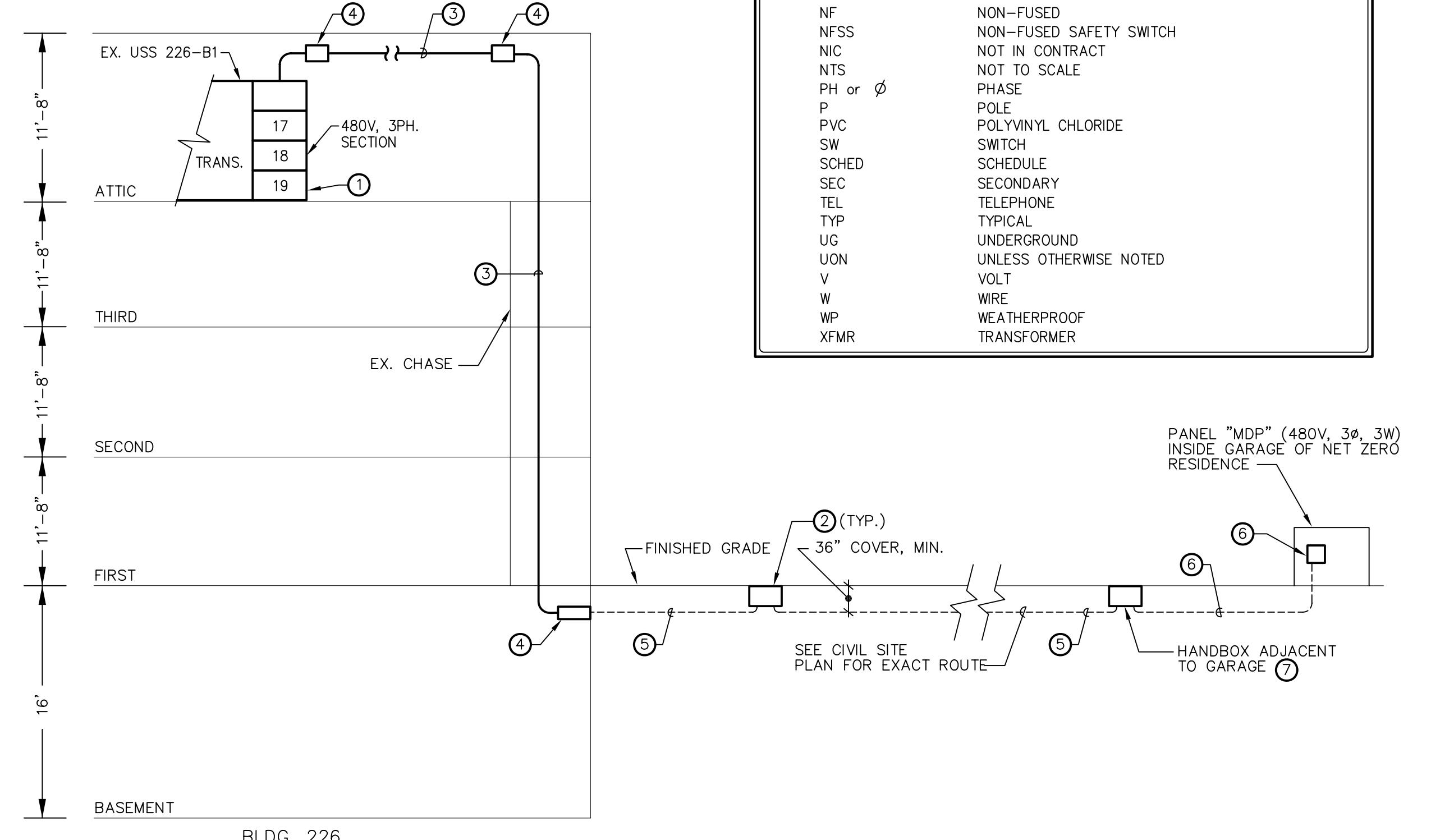
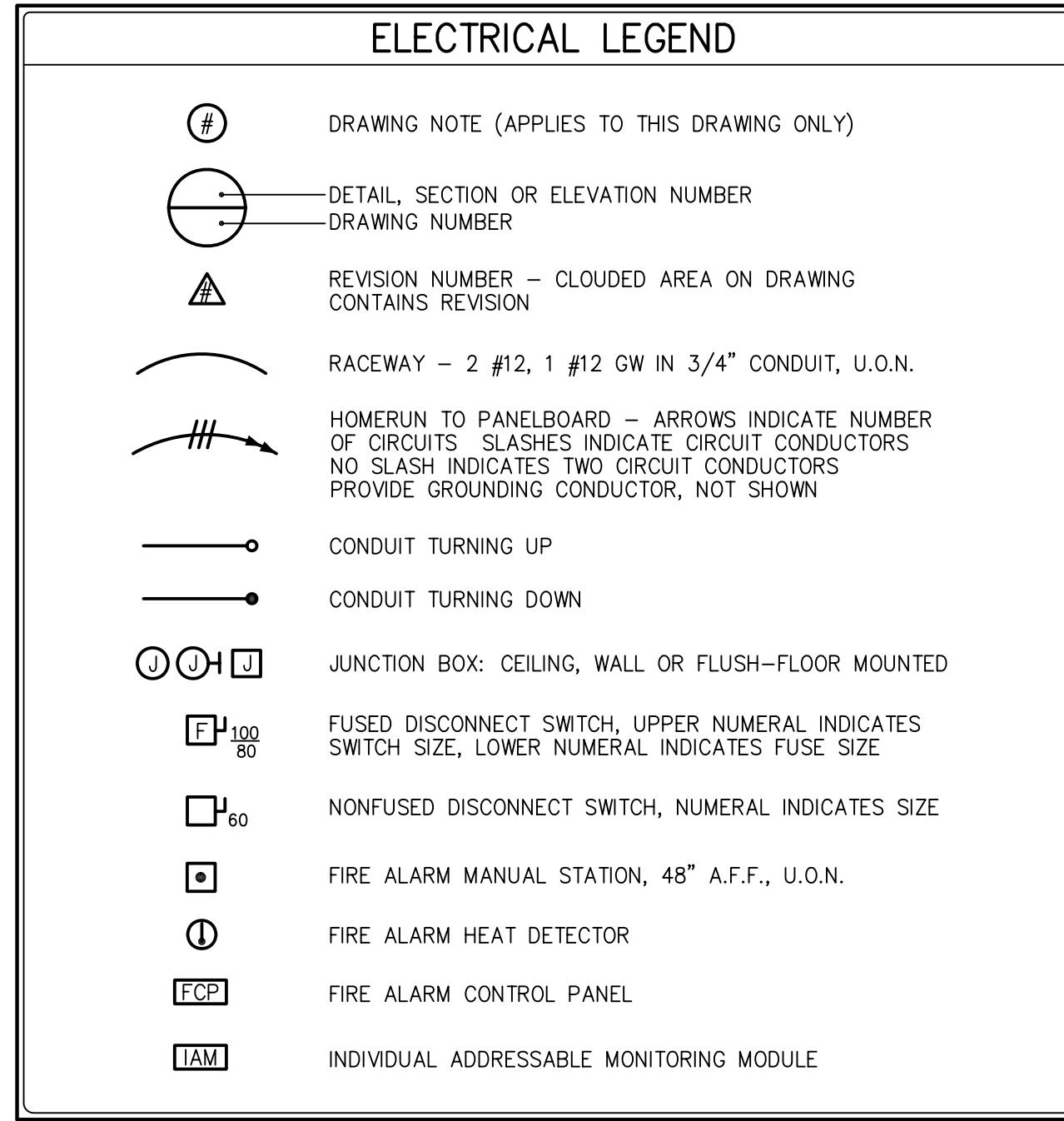
PLANT SCHEDULE

	BOTANICAL/COMMON	CONT	GAL	SIZE	QTY
AG	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / 'AUTUMN BRILLIANCE' SERVICEBERRY	CONT B & B	6-8' H 6		
IA	ILEX OPACA / AMERICAN HOLLY	B & B			
OA	OXYDENDRUM ARBOREUM / SOURWOOD TREE	B & B	2'CAL	3	
QA	QUERCUS ALBA / WHITE OAK	B & B	2'CAL	1	
QR	QUERCUS RUBRA / RED OAK	B & B	2'CAL	1	
TD	TAXODIUM DISTICHUM / BALD CYPRESS	B & B	6-8' H 3		
SHRUBS	BOTANICAL/COMMON	CONT	3 GAL		
CB	CALICARPA AMERICANA / AMERICAN BEAUTYBERRY				
CA	CLETHRA ALNIFOLIA / SUMMERSWEET CLETHRA		3 GAL		
CS	CORNUS SERICEA 'CARDINAL' / 'CARDINAL' RED-Twig DOGWOOD		3 GAL		
MA	MAHONIA AQUIFOLIUM / OREGON GRAPE		3 GAL		
VA	VIBURNUM DENTATUM / ARROWWOOD VIBURNUM		3 GAL		
SHRUB AREAS	BOTANICAL/COMMON	CONT	3 GAL @ 48" OC		
RG	RHUS AROMATICA 'GRO-LOW' / GRO-LOW FRAGRANT SUMAC				
GROUND COVERS	BOTANICAL/COMMON	CONT	4'POT @ 18" OC		
BN	BIORETENTION NATIVE MIX / SEE PLANTING LIST THIS SHEET				
EK	ECHINACEA PURPUREA 'KIM'S KNEE HIGH' TM / PURPLE CONEFLOWER		4'POT @ 18" OC	105	
LK	LIATRIS SPICATA 'KOBOLD' / KOBOLD BLAZING STAR		4'POT @ 12" OC	304	
RH	RUDBECKIA HIRTA / BLACK-EYED SUSAN		4'POT @ 18" OC	142	
UN	UPLAND NATIVE MIX / SEE PLANTING LIST THIS SHEET		SEED	6,525 SF	
BIORETENTION NATIVE MIX					
15%	Coreopsis lanceolata	Lance-Leaf Coreopsis			
10%	Helopsis helianthoides	Blue Eye Sunflower			
15%	Iris versicolor	Blue Flag Iris			
5%	Lupinus perennis	Wild Blue Lupine			
5%	Mitchella repens	Wild Bergamot			
5%	Monarda fistulosa	Soothsucker			
3%	Pentstemon integrifolium	Wild Oregano			
10%	Rubus hispida	Black-Eyed Susan			
20%	Schizachyrium scoparium	Little Bluestem			
10%	Sorghastrum nutans	Tomahawk Indian Grass			
100%	TOTAL				
UPLAND NATIVE MIX					
15%	Andropogon gerardii	Big Bluestem			
10%	Asclepias tuberosa	Butterfly Milkweed			
10%	Echinacea purpurea	Purple Coneflower			
10%	Liatris spicata	Blazing Star			
15%	Panicum virgatum	Switchgrass			
10%	Stipa capillaris	Bluestem Susan			
15%	Schizachyrium scoparium	Little Bluestem			
15%	Sorghastrum nutans	Indian Grass			
100%	TOTAL				

* Overseed entire area with 10 LBS per acre of Lolium multiflorum Annual Ryegrass in addition to those species listed above

** PLS = Pure Live Seed



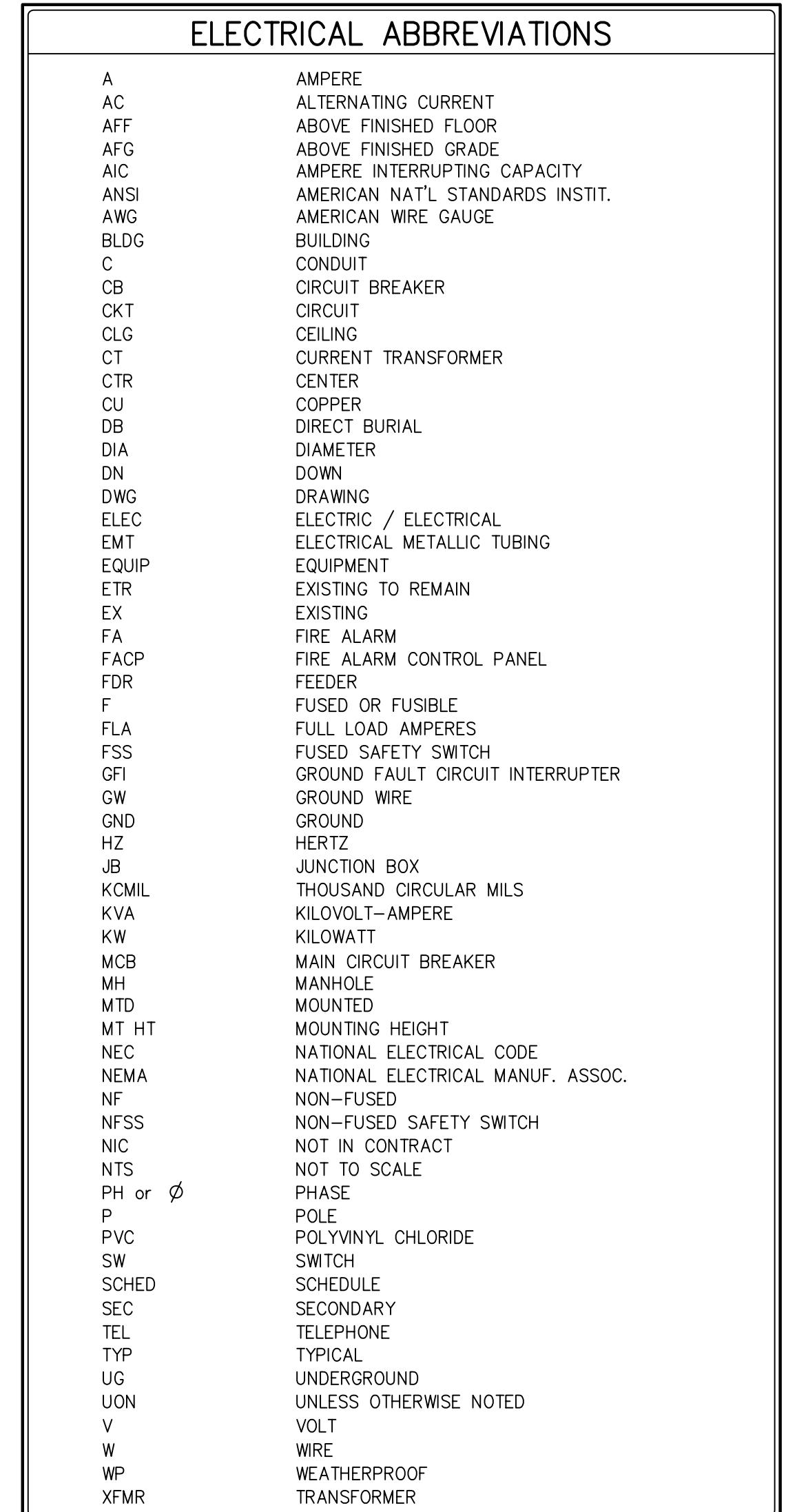


POWER RISER DIAGRAM

NOT TO SCALE

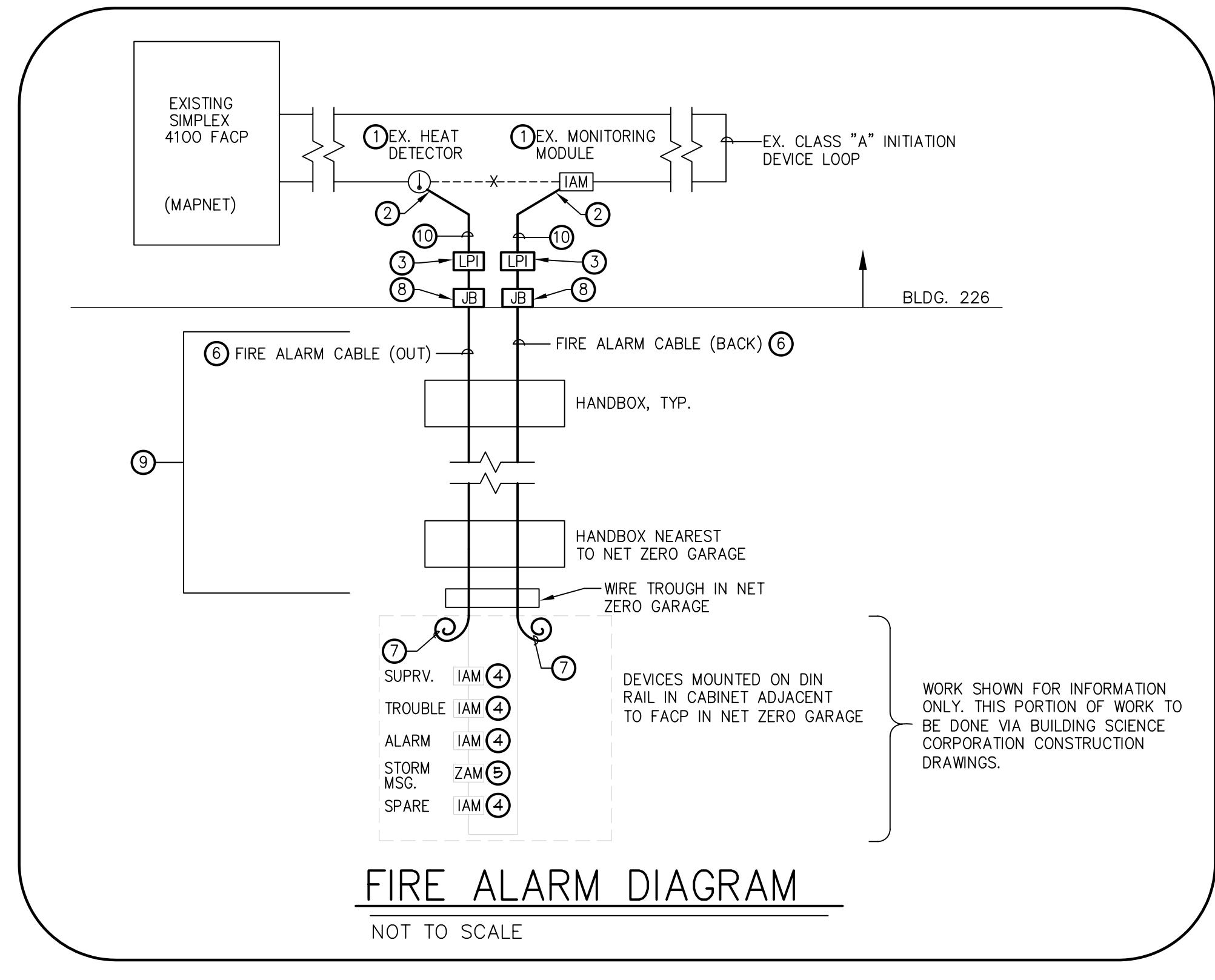
POWER RISER NOTES:

- ① EXISTING USS IS BY EATON/CUTLER-HAMMER. PROVIDE NEW DRAW-OUT CIRCUIT BREAKER IN EXISTING SPARE CUBICLE NO. 19. BREAKER SHALL BE 800AF/300AT, LSIG, MAGNUM DS WITH 400A CURRENT SENSORS AND 300A TRIP PLUG.
 - ② SEE CIVIL PLAN FOR QUANTITY, LOCATION AND DETAIL OF OPEN BOTTOM HANDBOXES.
 - ③ PROVIDE 2 SETS OF (3-300 KCMIL + 1 #1 GRD. IN 3" CONDUIT). WIRE IS OVERSIZED, DUE TO VOLTAGE DROP.
 - ④ PULLBOX. SEE DRAWING E-2 FOR SIZE AND LOCATION.
 - ⑤ PROVIDE 2 SETS OF (3-300 KCMIL + 1 #1 GRD. IN 3 1/2" CONDUIT) AND PROVIDE ONE SPARE 3 1/2" CONDUIT WITH PULL STRING.
 - ⑥ PROVIDE 3-500 KCMIL + 1 #3 GRD. IN 4" CONDUIT. LAND CONDUCTORS ON LINE SIDE OF PANEL "MDP" MAIN BREAKER. COORDINATE WITH GARAGE/HOUSE CONSTRUCTION AS REQUIRED.
 - ⑦ SPLICE 2 SETS OF 300 KCMIL CONDUCTORS (INCOMING) TO ONE SET OF 500 KCMIL CONDUCTORS (OUTGOING) IN HANDBOX. PROVIDE WATERTIGHT SPLICE.



FIRE ALARM GENERAL NOTES:

1. ALL FIRE ALARM DEVICES SHALL BE BY SIMPLEX (NO SUBSTITUTION). ALL WORK MUST BE COMPATIBLE WITH THE EXISTING SIMPLEX 4100 FIRE ALARM SYSTEM.
 2. PAINT CONDUITS WITH A RED STRIPE EVERY 10 FEET. PAINT ALL CONDUIT BODY COVERS AND JUNCTION BOX COVERS WITH RED PAINT.
 3. SPLICES AND T-TAPS ARE PROHIBITED.
 4. MINIMUM CONDUIT SIZE SHALL BE 3/4" EMT.
 5. ALL EXISTING DEVICES MUST REMAIN IN SERVICE WHEN THE NEW WORK IS BEING INSTALLED.
 6. ALL NEW CIRCUITS SHALL BE NFPA 72 "CLASS A" (STYLE 6).
 7. ALL TESTING SHALL BE PER MANUFACTURER'S INSTRUCTIONS AND NFPA 72. COMPLETE INTERNAL TESTING PRIOR TO REQUESTING AN OFFICIAL GOVERNMENT TEST.
 8. RE-PROGRAMMING OF EX. SIMPLEX FACP SHALL BE DONE ON A MONDAY OR TUESDAY. COORDINATE WITH NIST, PROGRAMMING SHALL BE DONE BY A NIST APPROVED, SIMPLEX AUTHORIZED PROGRAMMER. TIE-IN OF NEWLY PROGRAMMED DEVICES SHALL BE DONE NO LATER THAN THE NEXT DAY AFTER PROGRAMMING.
 9. SEE FIRE ALARM SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

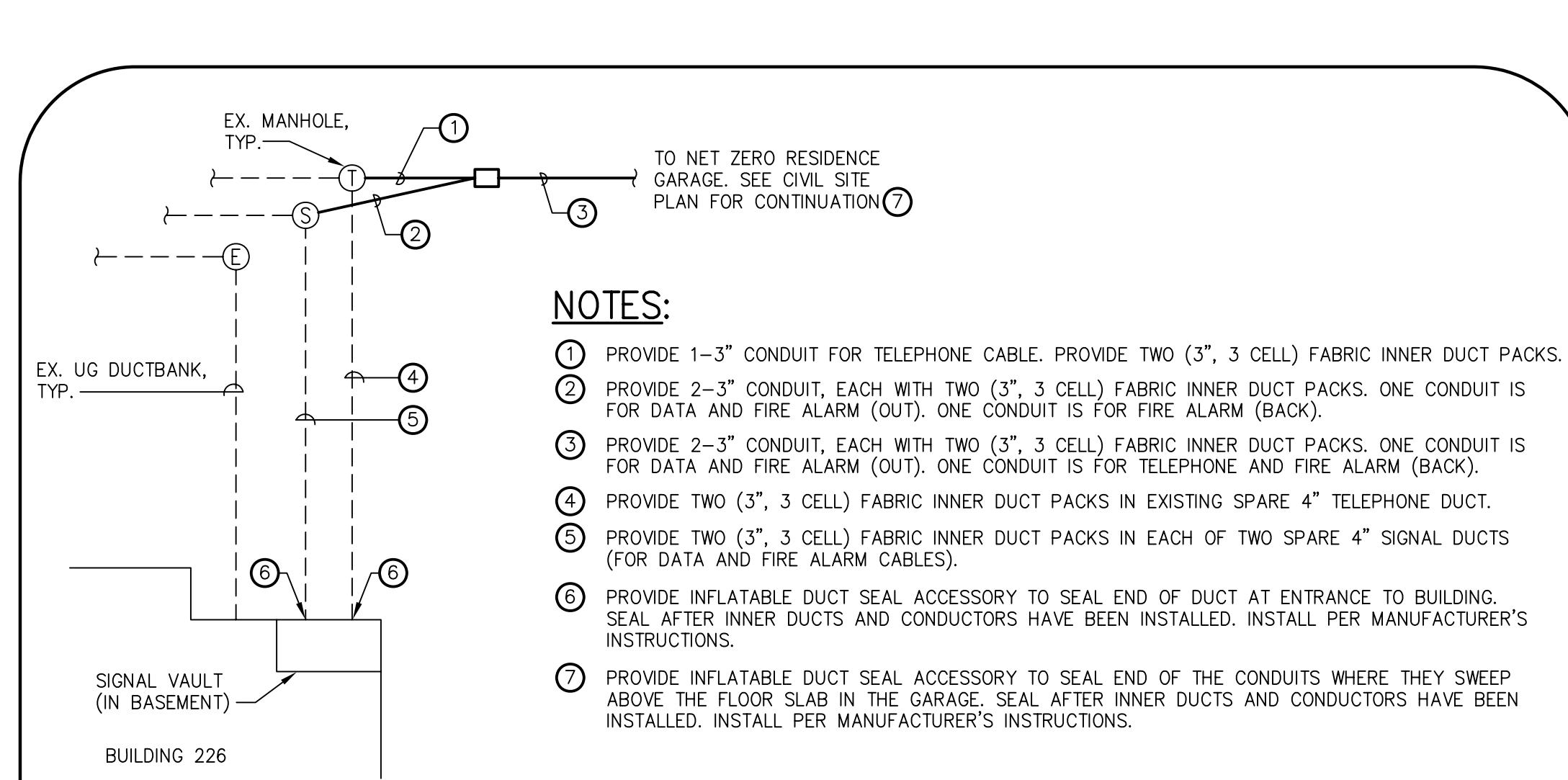


FIRE ALARM DIAGRAM

NOT TO SCALE

FIRE ALARM NOTES:

- ① SEE DRAWING E-2 FOR LOCATION OF EXISTING DEVICES IN SIGNAL VAULT.
 - ② EXTEND INITIATION DEVICE LOOP AS INDICATED. ADD BOX EXTENSIONS TO EXISTING DEVICE BOXES AS REQUIRED TO ALLOW FOR NEW CONNECTIONS.
 - ③ PROVIDE SIMPLEX 2190-9169, LINE POWERED ISOLATOR.
 - ④ SIMPLEX 4090-9001, INDIVIDUAL ADDRESSABLE MODULE.
 - ⑤ SIMPLEX 2190-9163, CONTROL RELAY ZONE ADAPTER MODULE.
 - ⑥ PROVIDE 3 CABLES (16 AWG TSP EACH). USE 1 PAIR FOR INITIATION LOOP, REMAINING 2 PAIR ARE SPARE. SEE FIRE ALARM SPEC FOR WIRE TYPE. SEE SYSTEMS CONDUIT DIAGRAM FOR ROUTING AND CONDUIT SIZE.
 - ⑦ PULL CABLES INTO FIRE ALARM DEVICE CABINET. COIL AND CAP/TAPE SPARE CABLES IN CABINET. TAG AS 'SPARE'. PROVIDE 5FT. LENGTH OF SPARE CABLE INSIDE CABINET.
 - ⑧ COIL SPARE CONDUCTORS IN BOX AND CAP/TAPE FOR PROTECTION. SIZE BOX AS REQUIRED.
 - ⑨ SEE CIVIL SITE PLAN FOR EXACT ROUTING OF UNDERGROUND CONDUIT AND LOCATION OF HANDBOXES. SEE HANDBOX DETAIL, THIS DRAWING.
 - ⑩ PROVIDE ONE 16 AWG TSP CABLE (SAME TYPE AS IS USED IN UNDERGROUND DUCT) IN 3/4" EMT CONDUIT



SYSTEMS CONDUIT DIAGRAM

NOT TO SCALE

REVISION	DESCRIPTION	BY	DATE
	95% CD SET		1/29/10
	100% CD SET		2/24/10
	FINAL COORDINATION		3/26/10
	ISSUED FOR CONSTRUCTION		3/31/10

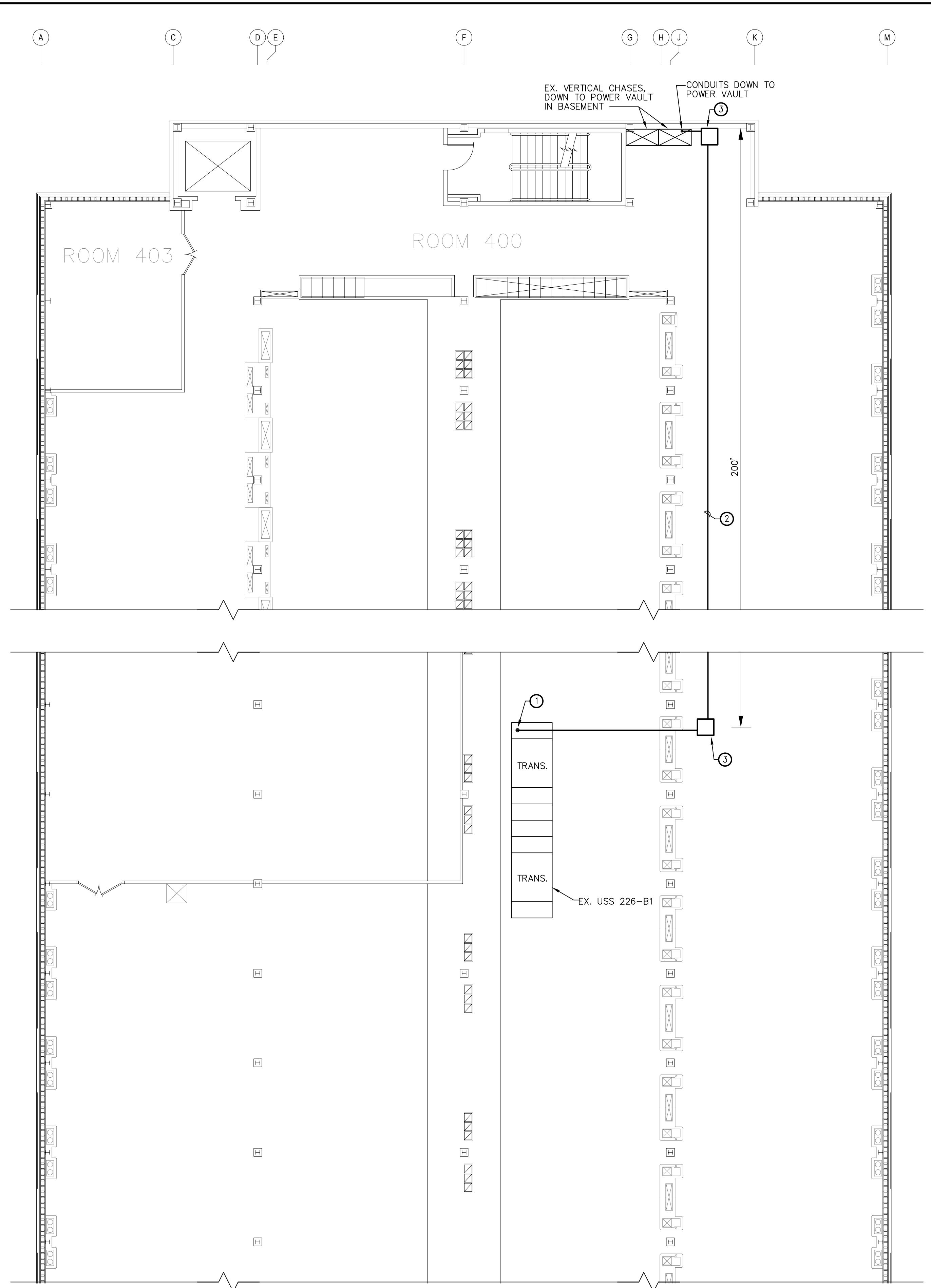


FOR OFFICIAL USE ONLY

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

ELECTRICAL LEGEND, ABBREVIATIONS, DIAGRAMS AND NOTES

SH.NO. ____ OF ____ DWG. E-1



1 ATTIC PLAN - ELECTRICAL - NEW WORK
E-2 SCALE: 1/8" = 1' 0"

SCALE: 1/8" = 1'-0"

DRAWING NOTES:

- 14

① SEE RISER ON DRAWING E-1 FOR CONNECTION WORK.

② SEE RISER ON DRAWING E-1 FOR CONDUIT AND WIRE SIZE. ADJUST CONDUIT PATH BASED ON FIELD CONDITIONS. PROVIDE PULLBOX(ES) AS REQUIRED.

③ PROVIDE 24" x 24" x 8" DEEP (MIN.) PULL BOX. ADJUST LOCATION BASED ON FIELD CONDITIONS.

④ NOT USED.

⑤ CUT EXISTING STEEL PLATE (COVERING CHASE), AS REQUIRED FOR NEW CONDUIT. MAINTAIN/RE-ESTABLISH FIRE RATING OF COVER AFTER CONDUITS ARE IN PLACE.

⑥ CORE DRILL EXISTING EXTERIOR WALL. PROVIDE WATERTIGHT SEAL PER DETAIL, THIS DRAWING.

⑦ PROVIDE (3) 3 1/2" PVC SCHEDULE 40, DIRECT BURIED CONDUITS WITH MIN. 36" COVER. (ONE IS SPARE-STUB INTO VAULT PULLBOX ONLY). SEE CIVIL SITE PLAN FOR CONTINUATION AND DIRECT DURIAL CONDUIT DETAIL. SEE RISER ON DRAWING E-1 FOR CONDUIT AND WIRE SIZE.

13

⑧ PROVIDE 8" x 36" x 36" DEEP PULLBOX. COORDINATE MOUNTING HEIGHT WITH UNDERGROUND CONDUIT ENTRY POINT ON EXTERIOR WALL.

⑨ EXISTING UNDERGROUND DUCTS SHOWN FOR INFORMATION ONLY.

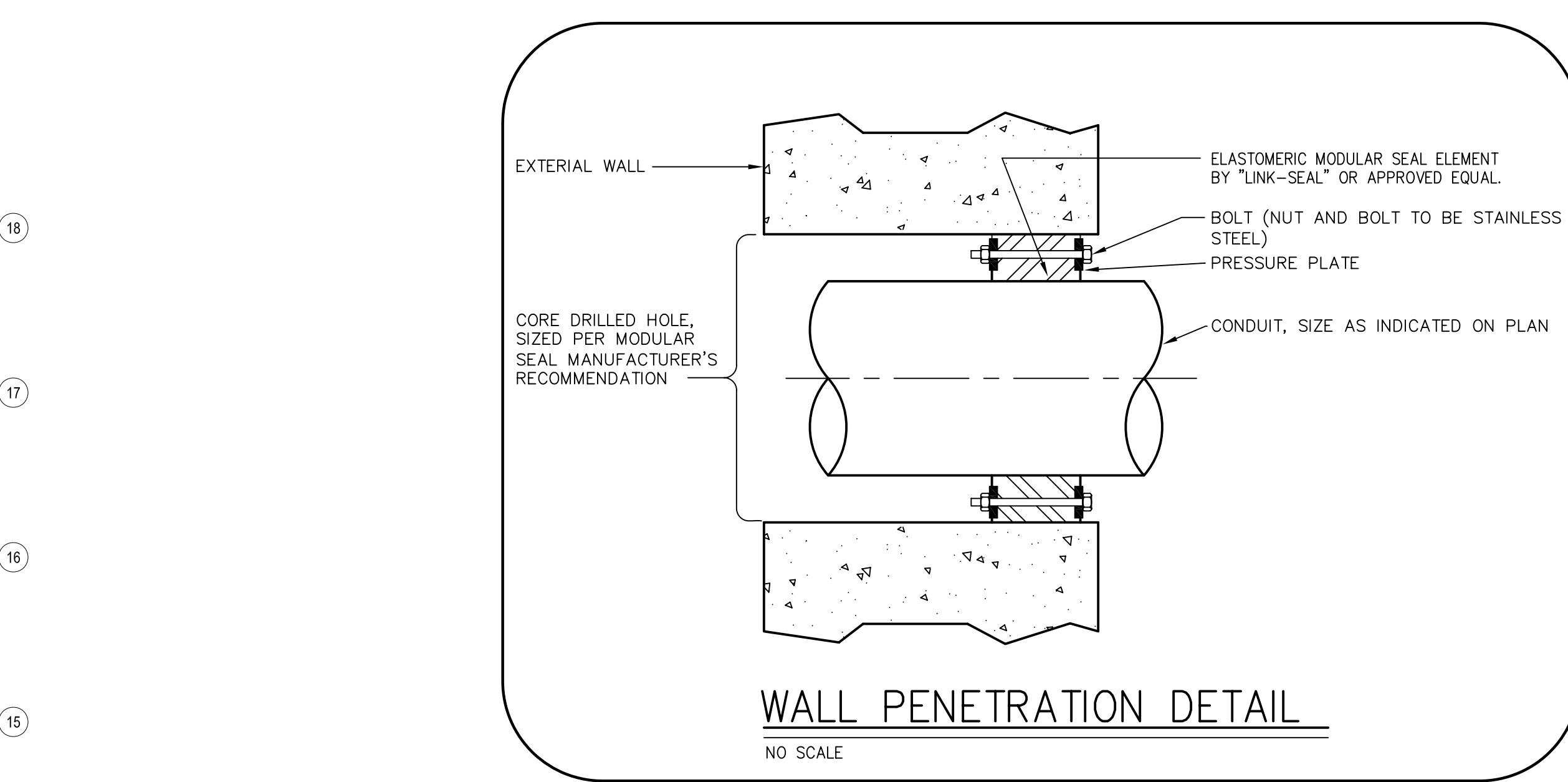
⑩ TELEPHONE, DATA AND FIRE ALARM SERVICE TO NET ZERO RESIDENCE WILL BE ROUTED VIA NEW UNDERGROUND DUCTS FROM EXISTING SIGNAL AND TELEPHONE MANHOLES IN FRONT OF BUILDING 226. SEE CIVIL SITE PLAN AND DRAWING E-1.

⑪ EXISTING FIRE ALARM MONITORING MODULE IN 4" SQUARE RED JBOX (ADDRESS NO. 26: M1-34). SEE FIRE ALARM DIAGRAM, DRAWING E-1.

⑫ EXISTING FIRE ALARM, CEILING MOUNTED HEAT DETECTOR. SEE FIRE ALARM DIAGRAM, DRAWING E-1.

12

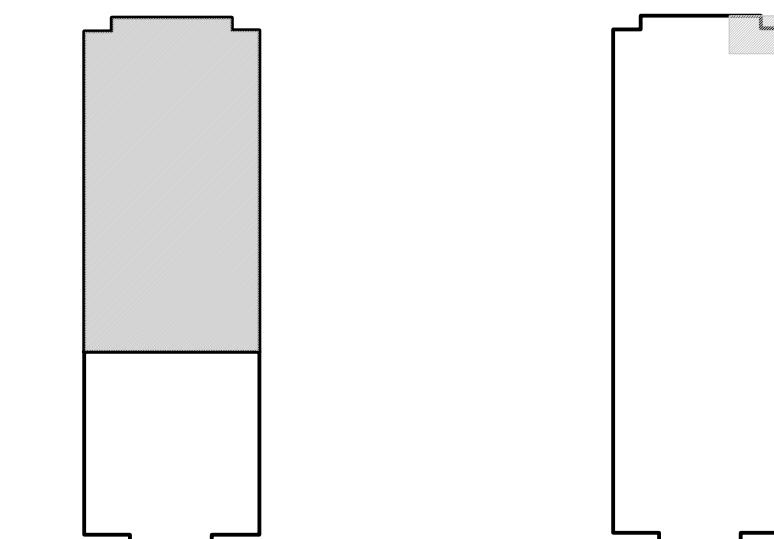
⑬



WALL PENETRATION DETAIL

GENERAL NOTES:

1. REFER TO DRAWING E-1 FOR ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES.
 2. INSTALLATION OF NEW DRAW-OUT BREAKER IN USS 226-B1 SHALL BE DONE ON A SATURDAY DURING A 2 HOUR (MAX.) OUTAGE. COORDINATE WITH NIST 2 WEEKS IN ADVANCE. PROVIDE TEMP. LIGHTING AS REQUIRED.
 3. ALL POWER CONDUCTORS RUN IN UNDERGROUND DUCT SHALL BE TYPE RHW-2.
 4. SEE CIVIL DRAWINGS FOR DIRECT BURIAL CONDUIT DETAIL AND HANDBOX DETAIL.
 5. PROVIDE PULL STRING IN ALL EMPTY DUCTS/CONDUITS.



KEY PLAN

TIC  **KEY PLAN-BASEMENT** 
NO SCALE

A scale bar with markings at 0, 4, 8, 16, and 24 inches. The markings are represented by black squares on a white background, with diagonal dashed lines extending from each square to indicate its position.

FOR OFFICIAL USE ONLY

U. S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
PLANT DIVISION

IC AND BASEMENT FLOOR PLANS

**IC AND BASEMENT FLOOR PLANS
ELECTRICAL - NEW WORK**

Digitized by srujanika@gmail.com

Table 1. Summary of the main characteristics of the four groups of patients.

D. ____ OF ____ | DWG. E-2

BKM# 090390.0

— 11 —