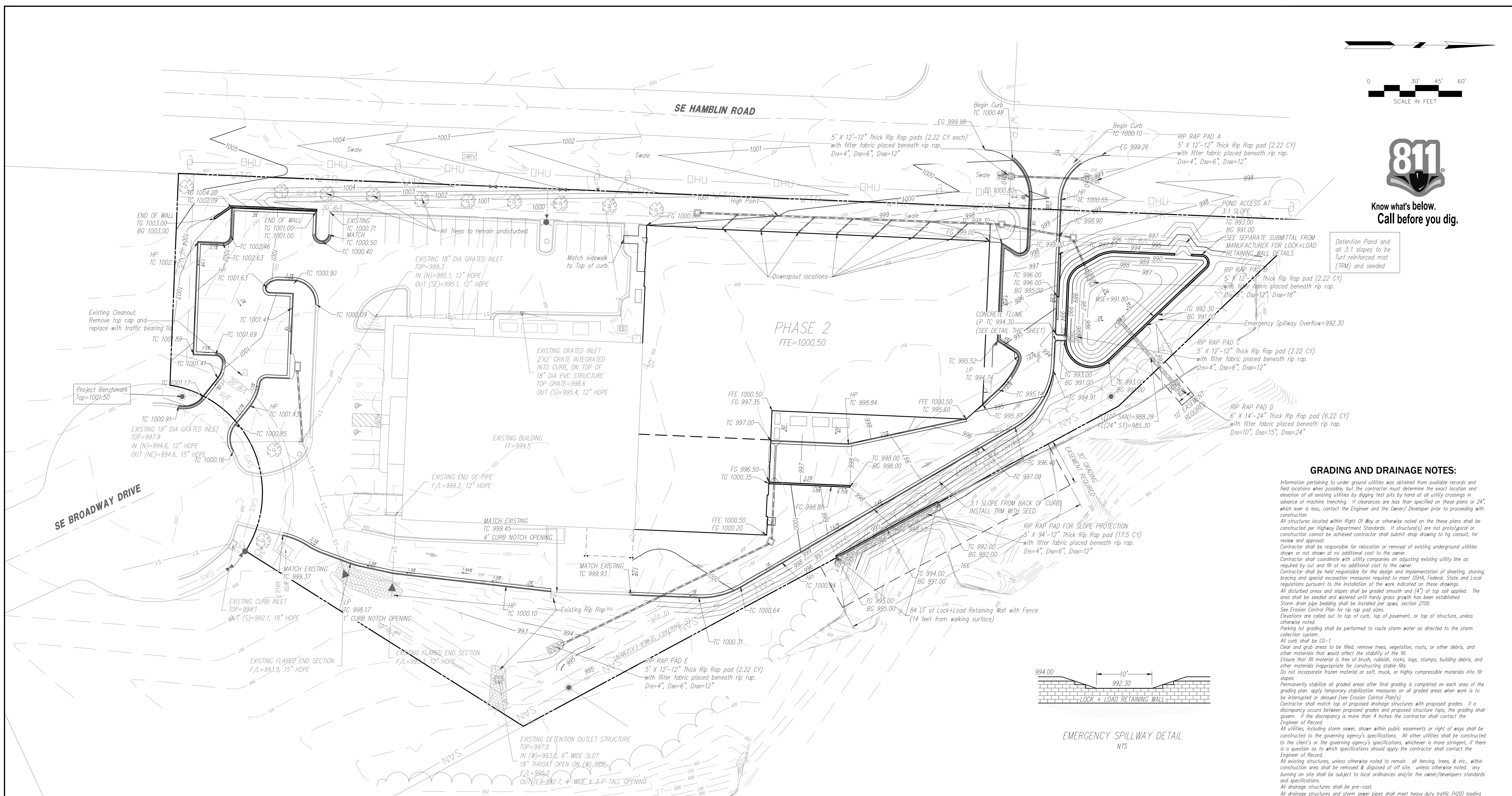


Know what's below.  
Call before you dig.



Detention Pond and all 3:1 slopes to be Turf reinforced mat (TRM) and seeded

**GRADING AND DRAINAGE NOTES:**

Information pertaining to under ground utilities was obtained from available records and field locations when possible, but the contractor must determine the exact location and elevation of all existing utilities by digging test pits by hand at all utility crossings in advance of machine trenching. If clearances are less than specified on these plans or 24" which ever is less, contact the Engineer and the Owner/Developer prior to proceeding with construction.

All structures located within Right Of Way or otherwise noted on these plans shall be constructed per Highway Department Standards. If structure(s) are not prototypical or construction cannot be achieved contractor shall submit shop drawing to hg consult, for review and approval.

Contractor shall be responsible for relocation or removal of existing underground utilities shown or not shown at no additional cost to the owner.

Contractor shall coordinate with utility companies on adjusting existing utility line as required by cut and fill at no additional cost to the owner.

Contractor shall be held responsible for the design and implementation of sheeting, shoring, bracing and special excavation measures required to meet OSHA, Federal, State and Local regulations pursuant to the installation of the work indicated on these drawings.

All disturbed areas and slopes shall be graded smooth and 1/4" of top soil applied. The area shall be seeded and watered until hardy grass growth has been established.

Storm drain pipe bedding shall be installed per apwa, section 2100.

See Erosion Control Plan for rip rap pad sizes.

Elevations are called out to top of curb, top of pavement, or top of structure, unless otherwise noted.

Parking lot grading shall be performed to route storm water as directed to the storm collection system.

All curb shall be CG-1.

Clear and grub areas to be filled, remove trees, vegetation, roots, or other debris, and other materials that would affect the stability of the fill.

Ensure that fill material is free of brush, rubbish, rocks, logs, stumps, building debris, and other materials inappropriate for constructing stable fills.

Do not incorporate frozen material or soft, muck, or highly compressible materials into fill slopes.

Permanently stabilize all graded areas after final grading is completed on each area of the grading plan. apply temporary stabilization measures on all graded areas when work is to be interrupted or delayed (see Erosion Control Plans).

Contractor shall match top of proposed drainage structures with proposed grades. if a discrepancy occurs between proposed grades and proposed structure tops, the grading shall govern. If the discrepancy is more than 4 inches the contractor shall contact the Engineer of Record.

All utilities, including storm sewer, shown within public easements or right of ways shall be constructed to the governing agency's specifications. All other utilities shall be constructed to the client's or the governing agency's specifications, whichever is more stringent, if there is a question as to which specifications should apply the contractor shall contact the Engineer of Record.

All existing structures, unless otherwise noted to remain. all fencing, trees, & etc., within construction area shall be removed & disposed of off site, unless otherwise noted, any burning on site shall be subject to local ordinances and/or the owner/developers standards and specifications.

All drainage structures shall be pre-cast.

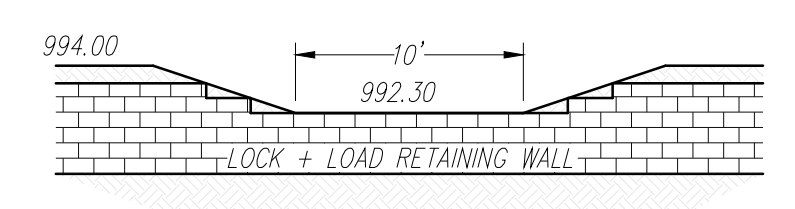
All drainage structures and storm sewer pipes shall meet heavy duty traffic (H20) loading and be installed accordingly.

Contractor shall notify all utility companies having underground utilities on site or in right-of-way prior to excavation. Contractor shall contact utility locating company (STATE ONE CALL system) and locate all utilities prior to grading start.

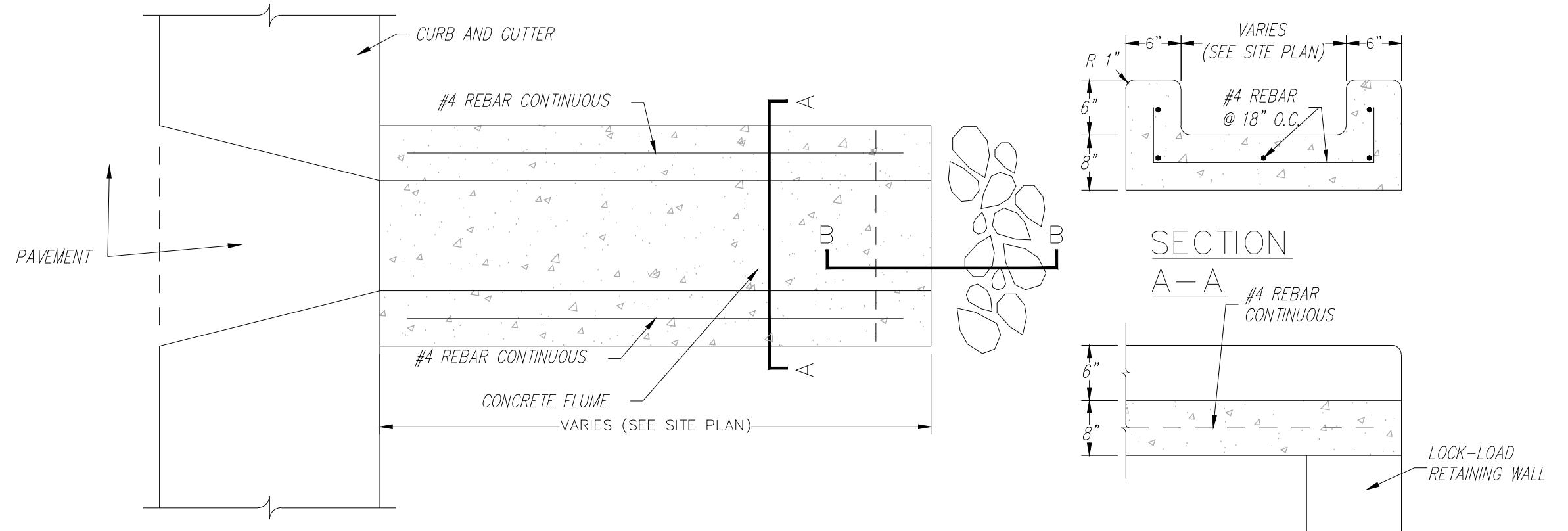
Site grading shall not proceed until Erosion Control measures have been installed.

After permits have been obtained and Erosion Control measures installed, the contractor shall grade building pad & aprons to 0" to 1/2" of subgrade.

\*\*See Storm Water Report for Rip Rap Sizing Calculations.



EMERGENCY SPILLWAY DETAIL  
NTS



CONCRETE FLUME  
NTS

Rip Rap Location	Pipe Size (In.)	Depth (Ft.)	Width (Ft.)	Length (Ft.)	Specific Weight of Rock (Pcf)	Rock Weight	Velocity (FPS)	D15 (In.)	D50 (In.) Avg.	D100 (In.)	Note
A	15	12	4 (use 5' min.)	12	165		6.2	4	5 (Use 6 as min.)	12	
B	15	12	4 (use 5' min.)	12	165		9.6	8	12	18	
C	Flume (0.75x3')	12	4 (use 5' min.)	12	165		1.8	4	6	12	1
D	8	24	4 (Use 6' min.)	12	165		10.6	10	15	24	
E	12	12	4 (Use 6 min.)	12	165		4.2		2 (Use 6 as min.)		1

Notes:  
1. Rip Rap is not normally required for velocity below 5 fps, provided for erosion purposes only

- Tip out curb and gutter
- 1' Finish Grade Contours
- 5' Finish Grade Contours
- Finish Grade slope
- Retaining wall

- TC Top of Curb
- FG Finish Grade
- C Gutter Elevation
- HP High Point
- LP Low Point
- FFE Finish Floor Elevation
- TG Top of Grade (Retaining Wall)
- BG Bottom of Grade (Retaining Wall)
- FES Flared End Section
- WSE Water Surface Elevation

**PROJECT BENCHMARK:**  
#1 Top of Sanitary Manhole lid at south side of site on SE Broadway cul-de-sac.  
N: 992422.0300  
E: 2829012.5430  
TOP ELEV. 1001.50

NO.	BY	CHK/APP	DATE	REVISION
1	EDH	RKS	7/30/19	
2	EDH	RKS	4/16/19	Revised per city comments dated 4/16/19
4	EDH	RKS	10/15/19	Revised per city comments dated 10/15/19. Roof drains into storm sewer system.



10/15/19  
**Consult Inc**  
engineers  
planners  
CORPORATE LICENSE NO. E201005873  
R. KEVIN STERRETT, NO. E-26440

GRADING PLAN  
HIGH TECH SOLUTIONS  
LEE'S SUMMIT - JACKSON COUNTY - MISSOURI