

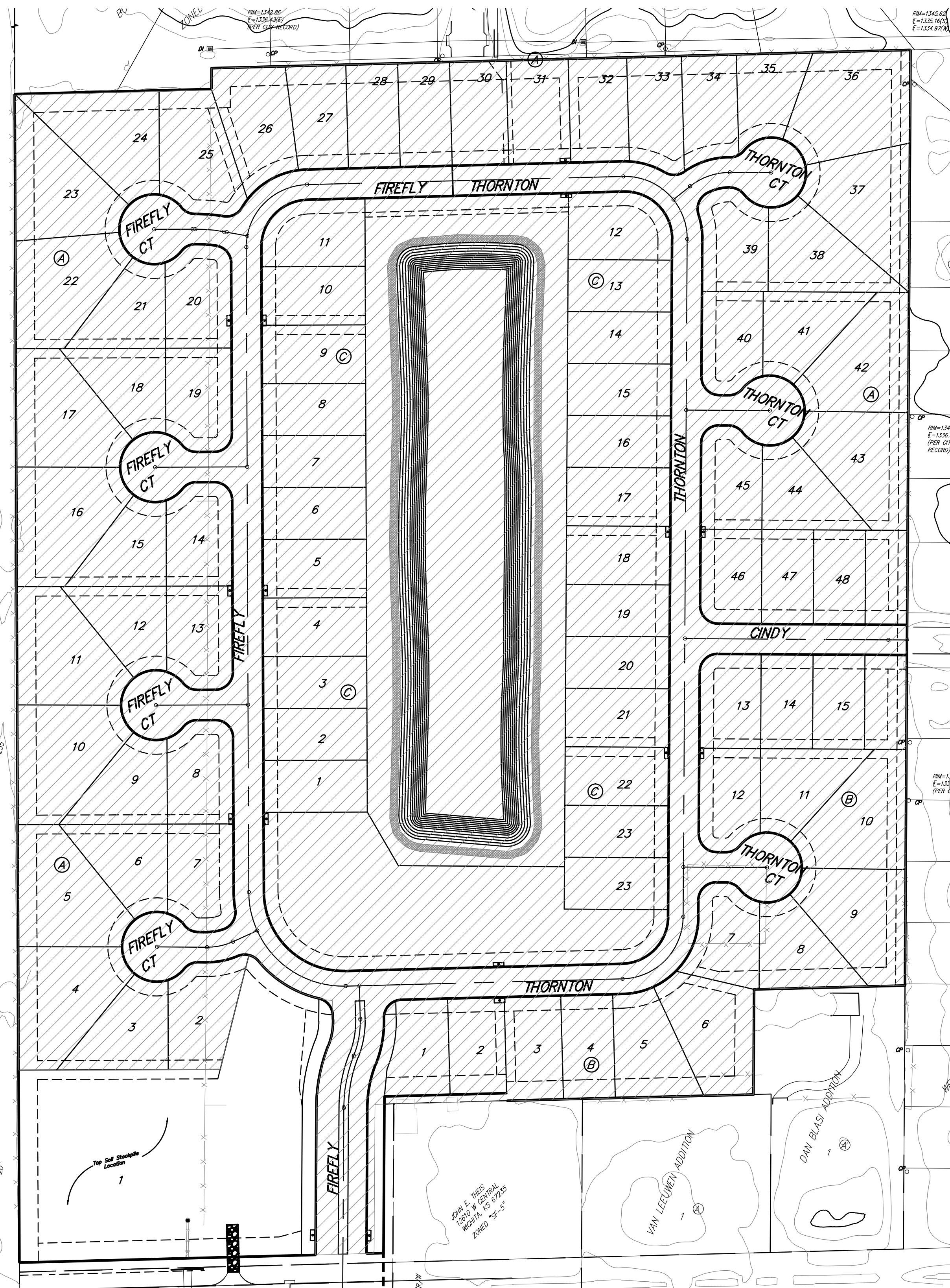
AS BUILT PLANS

Inspector: Don Eddingfield, Baughman Co.
Contractor: Unruh Excavating
pdf's by: KEK, 5/16/14

BENCHMARKS

- BENCHMARKS:**
 "X" CUT ON TOP OF CURB INLET NORTH SIDE OF CENTRAL 30' EAST OF THE INTERSECTION OF CENTRAL AND FIREFLY.
 ELEV. = 1341.99 (NAVD88)
- "X" CUT IN CURB INLET EAST SIDE OF AZURE ST. NEAR NORTH END OF CASTLEGATE ADDITION.
 ELEV. = 1342.58 (NAVD88).
- "X" CUT IN NORTH SIDE OF CURB ALONG EXISTING CINDY DRIVE, ONE JOINT BACK FROM EDGE OF PAVEMENT, NEAR EAST EDGE OF CASTLEGATE ADDITION.
 ELEV. = 1342.38
- #4 REBAR ALONG EXISTING FENCE LINE NEAR SWS CORNER OF LOT 11 BLOCK A, CASTLEGATE ADDITION.
 ELEV. = 1343.56

SCALE: 1" = 80'



Area to be graded

Sheet Index

Title Sheet	1
Mass Grading Plan	2-3
Pond Plan	4
Erosion Control Details	5-6
Plat	7

WATER QUALITY MEASURES

Disturbed Area: 25.24 acres
 WQV: 1.29 ac. ft.
 Detrac: 9.0 ac. ft.
 CPV: 2.7 ac. ft.

Downstream Channel Protection per the Castlegate Addition Drainage Plan. The storm water sewer system, including all pipe and inlets, will be constructed with the a follow up PPD, in agreement with the site design. Downstream Channel Protection will be addressed with the follow up PPD.

Water Quality Requirements will be addressed with the construction of the proposed pond. This improvements has been developed to satisfy Section 16.32 of the City Code.

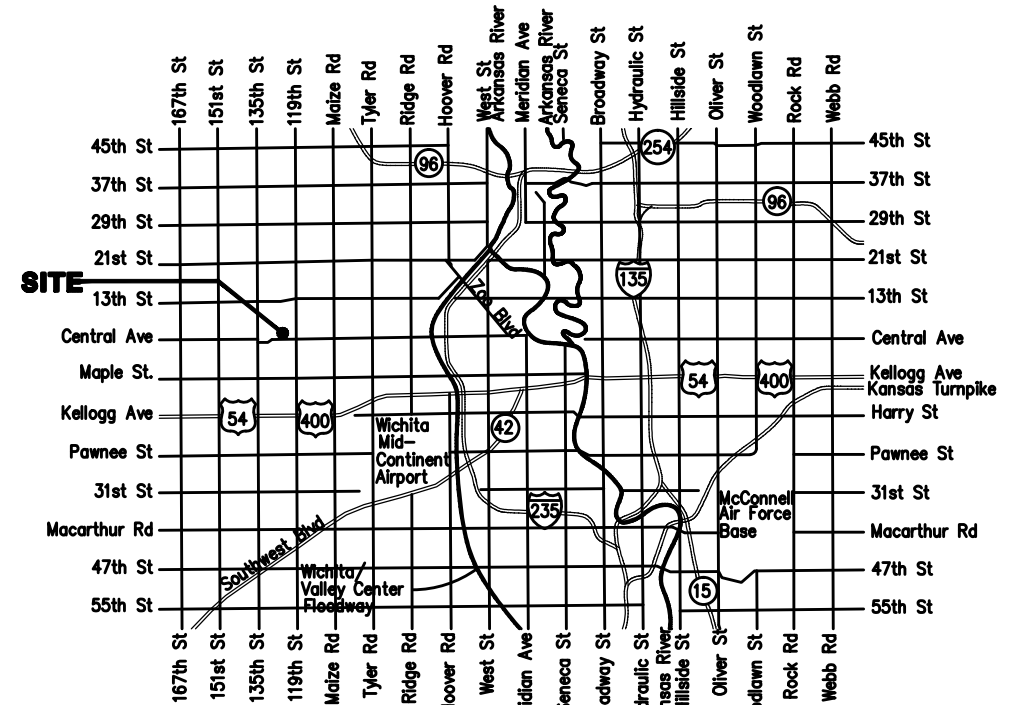
**APPROVED AS NOTED
BY CITY ENGINEER OF WICHITA**

Engineering: *Rebecca Dziel* 4/17/14

Stormwater: *[Signature]* 4/16/14

NOTE TO CONTRACTORS

Installation, inspection and testing for this project is to be provided by a Licensed Consulting Engineering Firm under contract with the Owner/Developer. Said inspection to be in accordance with the City of Wichita standard construction engineering practices and certified by a Licensed Professional Engineer. No work shall be performed in dedicated easements or public right-of-way by the Contractor without such inspection nor shall any work be commenced without written authorization by the City Engineer. All Construction and Materials shall comply with the City of Wichita Specifications and Standards (on file and available in the City Engineer's Office).



Vicinity Map

EARTH WORK TOTALS (Unadjusted)
(for information only)

Mass Grading	C.Y. Cut	C.Y. Fill
	46,302	45,075

PRIVATE MASS GRADING IMPROVEMENTS

to serve

CASTLEGATE ADDITION

Private Project Drainage: 0235 PPD (607861)

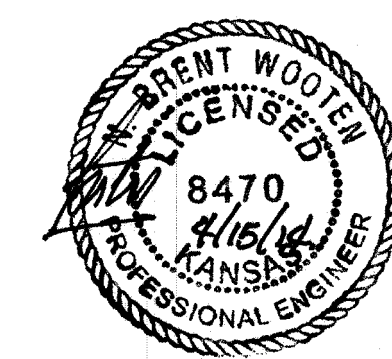
CITY OF WICHITA, KANSAS

Gary Janzen, P.E. - City Engineer

April 2014

GENERAL NOTES:

- Contractor will be required to provide notice to utility companies a minimum of two (2) business days prior to any excavation, as follows:
 Kansas One-Call 687-2470
 The Contractor must notify the following in case of an emergency:
 Cox Communications 262-4270
 Kansas Gas Service 1-888-482-4950
 Westar Energy 383-8650
 Aquila Energy 1-800-303-0357
 SBC 268-2245
 City of Wichita Water Dept. 268-4563
 City of Wichita Sewer Maint. 268-4024
 City of Wichita Storm Sewer Maint. 268-4090
 City of Wichita Traffic Maint. 268-4034
 Conoco Phillips Pipeline 1-877-267-2290
 Southern Star Pipeline 529-6600
 Kinder Morgan Pipeline 1-888-844-5658
 Enbridge Pipeline 1-800-323-6241
- Utility service lines, poles, valve boxes, meters, and etcetera are to be adjusted as necessary by others prior to construction unless the plans specifically call for their adjustment by the Contractor or unless the plans specifically identify a utility to be adjusted by its owner during construction. Existing utilities and their location, as shown on the plans, represent the best information obtainable for design. The Contractor will be required to work around existing utilities within the right-of-way which do not conflict with proposed construction.
- Rubble from the removal of miscellaneous structures shall be disposed of off site, to be provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance and site location. Locations, in the opinion of the Engineer, that will leave an unsightly appearance will not be approved. All disposal sites must be approved by the Kansas Department of Health and Environment. Material either stockpiled or disposed of in a flood plain would require a Kansas State Board Agriculture permit. Any material dumped in waters of the United States or wetlands is subject to U.S. Corps. of Engineers permitting regulations. Any material buried or stockpiled beyond approved construction limits would require additional archaeological investigations unless buried in a previously approved borrow location.
- All of pond bank above the static water surface disturbed by construction shall be seeded and mulched as follows:
 (Permanent Seeding)
 SEED -- Kansas Premium Fescue Blend; 8#/1000 Sq. Ft.
 FERTILIZER -- 12-24-12 Ratio at 350 Lbs./Ac.
 MULCH -- 2 Tons Prairie Hay / Acre
 All other disturbed areas not in street R/W are to be seeded as follows:
 (Temporary Seeding)
 SEED -- Rye grass (PLS)--5#/1000 Sq. Ft. and Kansas Premium Fescue Blend; 5#/1000 Sq. Ft.
 All costs associated with seeding including perpetration of ground, seeding, fertilizing, mulching, etc. shall be paid as L.S. bid item "Project Seeding".
- The Contractor shall be responsible for preserving property irons. The Contractor will be required to re-establish any property irons which are damaged or destroyed by his construction operations. Such irons shall be re-established by a licensed land surveyor in accordance with state laws.
- This project is subject to a current SWPPP Plan. Contractor shall comply with any unusual requirements as necessary for site to be in compliance during construction.
- All proposed erosion control measures including Silt Fencing, Erosion Control Mat, Straw Bales, Inlet Barriers, and Const. Entrance shall be maintained throughout construction by the contractor and until project is accepted by the Owner. The on-site engineer shall complete weekly reports on the status of erosion control measures. The contractor shall be required to comply with maintenance and/or replacement of erosion control measures as determined by the on-site engineer until project is accepted by the Owner. Maintenance and/or replacement of erosion control measures to be paid as L.S. bid item "Site Clearing & Restoration"
- At conclusion of construction, an as-built survey will be completed by the Engineer. The Contractor will be required to finish and smooth grade all locations as necessary that are not within ±0.3' of plan grade. The Contractor shall include all costs associated with the regrading and/or remediation to bring the grades into compliance in the bid item "Mass Grading."
- Earthwork Quantities are approximate and are for reference only. No adjustments values have been used to account for shrink/swell. The Contractor shall satisfy himself with the Earthwork Quantities provided prior to bidding. No additional payments or change orders for earthwork will be accepted.
- All areas within the Construction Limits shall be a minimum compaction density of 95%, including all Right-of-Ways and proposed building pads. The Owner shall provided compaction testing per specification as they see fit. All areas found not to meet the required minimum compaction will be reconstructed and re-compacted at the cost of the Contractor. No additional payments or change orders, for work not meeting minimum compaction, will be accepted.
- A 1' thick compacted pond liner shall be constructed over the entire surface of the proposed pond. The Compacted Pond Line shall be paid as a L.S. bid item "Compacted Fill, Including Pond Liner".
- Prior to Mass Grading and Excavation, the Contractor shall remove the top six inches (6") of soil and stock pile in the center of Lot 1, Block A. Upon completion of Mass grading the top soil shall be redistributed throughout all reserves and inside the lots, excluding areas where proposed building pads are to be located. Stock Piling and re-grading of top soil shall be paid as L.S. bid item "Mass Grading".
- Contractor to construct temporary ditches as necessary for construction. All temporary ditches are required to have positive drainage towards the proposed detention pond and shall not be constructed under proposed building pads. Cost of constructing and maintaining temporary ditches along with required ditch checks, per "Straw Bale Ditch Check" sheet 6, shall be paid as L.S. bid item "Temporary Drainage Ditches (as Necessary)".
- Proposed Building Pads to be graded to 8" inches below top of foundation call out, ex. XX.X T.F., within entire shaded region. Construction of building pads shall be paid as L.S. bid item "Mass Grading".
- Contractor to be responsible for supplying all necessary equipments, such as water trucks and etc., and materials needed to control dust levels during excavation. It shall be at the discretion of the Engineer, or his representative, as to the levels at which the ground must remain saturated, to minimize dust levels. All labor, equipment and materials necessary to maintain such work shall be paid as L.S. bid item "Erosion & Dust Control".



Baughman
 Baughman Company, P.A. 315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
 ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

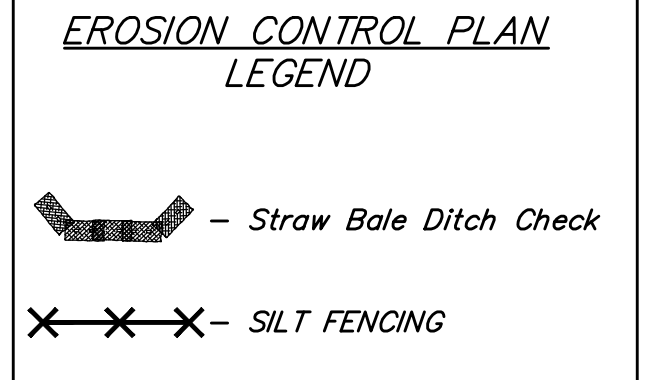
BENCHMARKS:

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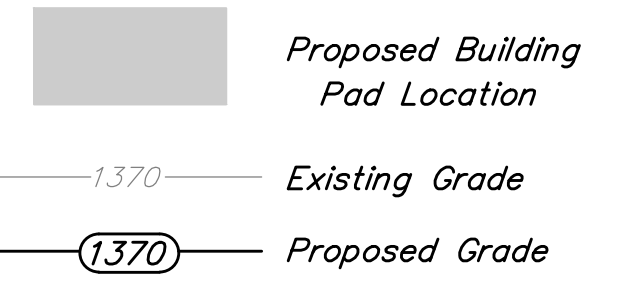
"X" CUT IN CURB INLET EAST SIDE OF AZURE ST. NEAR NORTH END OF CASTLEGATE ADDITION.
ELEV. = 1342.58 (NAVD88)

"X" CUT IN NORTH SIDE OF CURB ALONG EXISTING CINDY DRIVE, ONE JOINT BACK FROM EDGE OF PAVEMENT, NEAR EAST EDGE OF CASTLEGATE ADDITION.
ELEV. = 1342.39

#4 REBAR ALONG EXISTING FENCE LINE NEAR SWS CORNER OF LOT 11 BLOCK A, CASTLEGATE ADDITION.
ELEV. = 1343.56

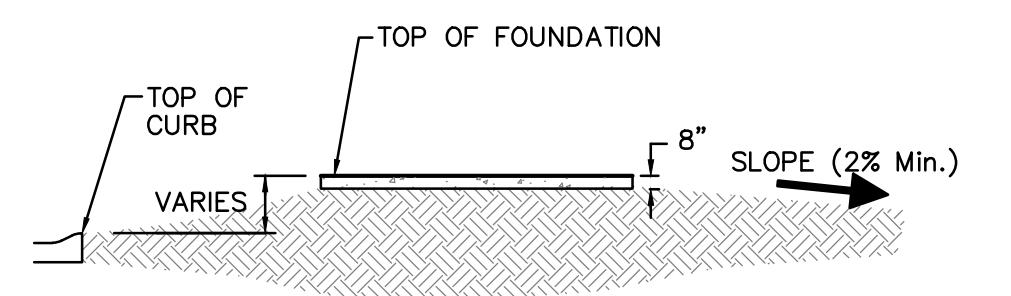


Scale: 1" = 40'



Contractor to over-excavate and re-compact sanitary sewer lagoon in 6" lifts. Each lift is to be compaction tested by Owner, prior to the construction following lift. Excavation and compaction of existing lagoon top be paid as L.S. "Mass Grading".

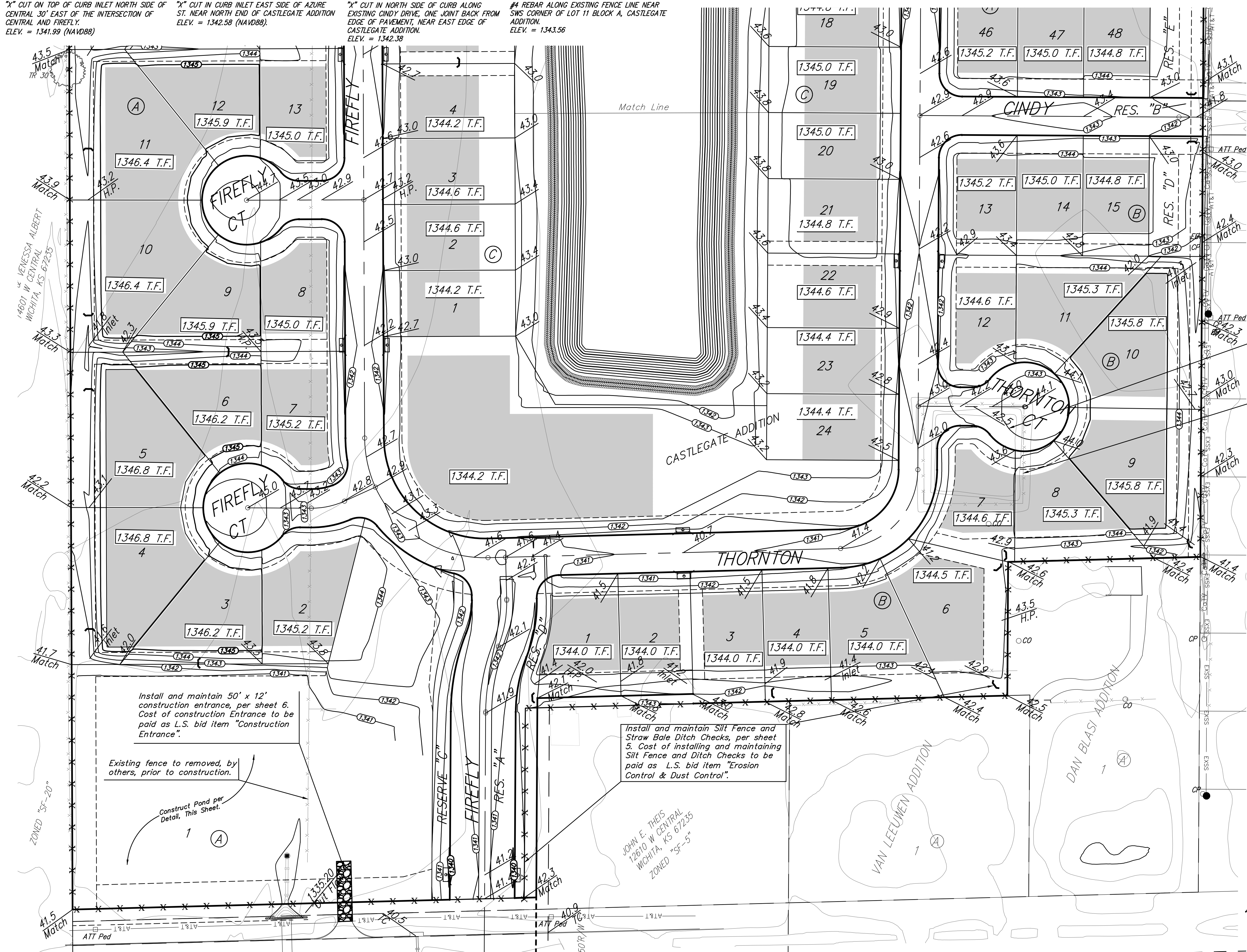
Existing fence and sanitary sewage waste to be removed prior to construction, by others.



EARTH WORK TOTALS (Unadjusted)
(for information only)

	C.Y. Cut	C.Y. Fill
Total Earthwork	46,302	45,075

- MASS GRADING GENERAL NOTES:**
- Contractor shall strip top 6" of soil before mass grading and stockpile. Top soil stockpile to be redistributed prior to seeding.
 - Compaction of 95% std. proctor density shall be obtained in all areas. Contractor shall be responsible for providing testing reports & results, for all areas graded (cost to be included in L.S. Bid Item "Mass Grading").
 - It shall be the Contractor's responsibility to protect existing utilities during mass grading. Any damage done to these systems by Contractor or Subcontractor shall be repaired at no additional cost to the project.
 - Existing Trees shall remain and be protected from damage unless otherwise noted.
 - All areas disturbed by construction shall be seeded as indicated on the Cover Sheet (See General Note No. 4).



Install and maintain 50' x 12' construction entrance, per sheet 6. Cost of construction Entrance to be paid as L.S. bid item "Construction Entrance".

Existing fence to be removed, by others, prior to construction.

Construct Pond per Detail, This Sheet.

Install and maintain Silt Fence and Straw Bale Ditch Checks, per sheet 5. Cost of installing and maintaining Silt Fence and Ditch Checks to be paid as L.S. bid item "Erosion Control & Dust Control".

JOHN E. THEIS
12010 W CENTRAL
WICHITA, KS 67235
ZONED "SF-5"

CASTLEGATE ADDITION
MASS GRADING
WICHITA, KANSAS

Baughman
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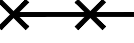
PROJECT NUMBER: NBW/JCS
DESIGN: NBW/JCS
DRAWN: JCS
APPROVED: DATE: 4/7/14
SCALE: 1" = 40'
SHEET: 2 OF 7

8470
4/16/14
KANSAS
PROFESSIONAL ENGINEER



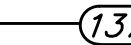
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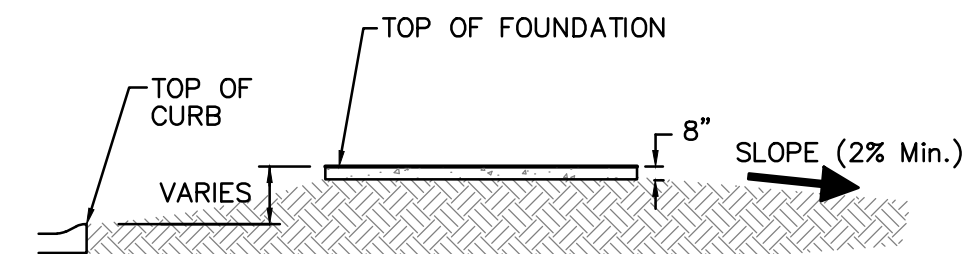
EROSION CONTROL PLAN LEGEND

-  - Straw Bale Ditch Check
-  - SILT FENCING

Scale: 1" = 40'

-  Proposed Building Pad Location
-  Existing Grade
-  Proposed Grade

Install and maintain Silt Fence and Straw Bale Ditch Checks, per sheet 5. Cost of installing and maintaining Silt Fence and Ditch Checks to be paid as L.S. bid item "Erosion Control & Dust Control".



TYPICAL SLAB FOUNDATION DETAIL
NO SCALE

EARTH WORK TOTALS (Unadjusted)
(for information only)

	C.Y. Cut	C.Y. Fill
Total Earthwork	46,302	45,075

- MASS GRADING GENERAL NOTES:**
- Contractor shall strip top 6" of soil before mass grading and stockpile. Top soil stockpile to be redistributed prior to seeding.
 - Compaction of 95% std. proctor density shall be obtained in all areas. Contractor shall be responsible for providing testing reports & results, for all areas graded (cost to be included in L.S. Bid Item "Mass Grading").
 - It shall be the Contractor's responsibility to protect existing utilities during mass grading. Any damage done to these systems by Contractor or Subcontractor shall be repaired at no additional cost to the project.
 - Existing Trees shall remain and be protected from damage unless otherwise noted.
 - All areas disturbed by construction shall be seeded as indicated on the Cover Sheet (See General Note No. 4).

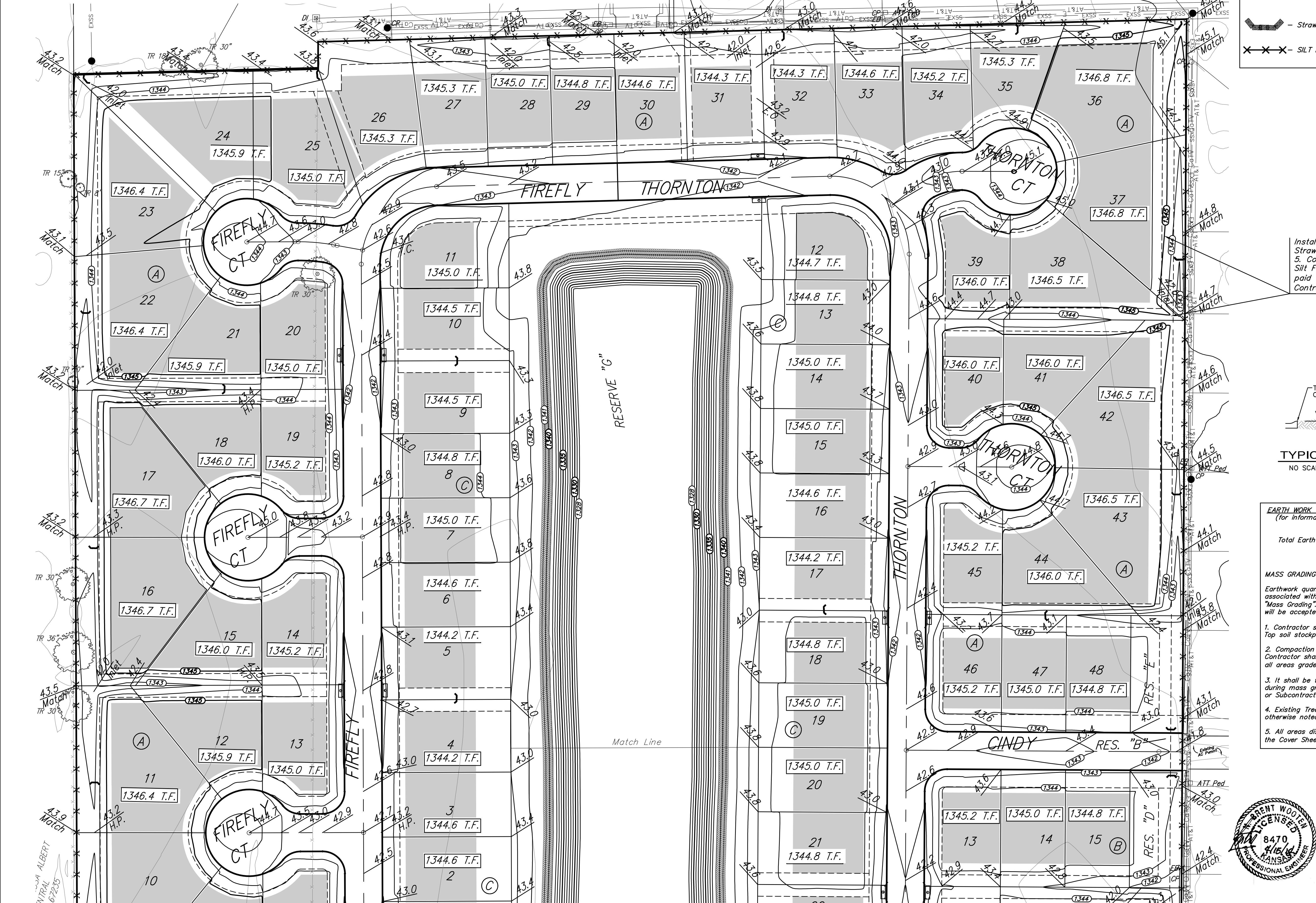
CASTLEGATE ADDITION
MASS GRADING
 WICHITA, KANSAS

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 Baughman Company, P.A., 315 Ellis St. Wichita, KS 67211 P 316-262-1271 F 316-262-0149
 ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

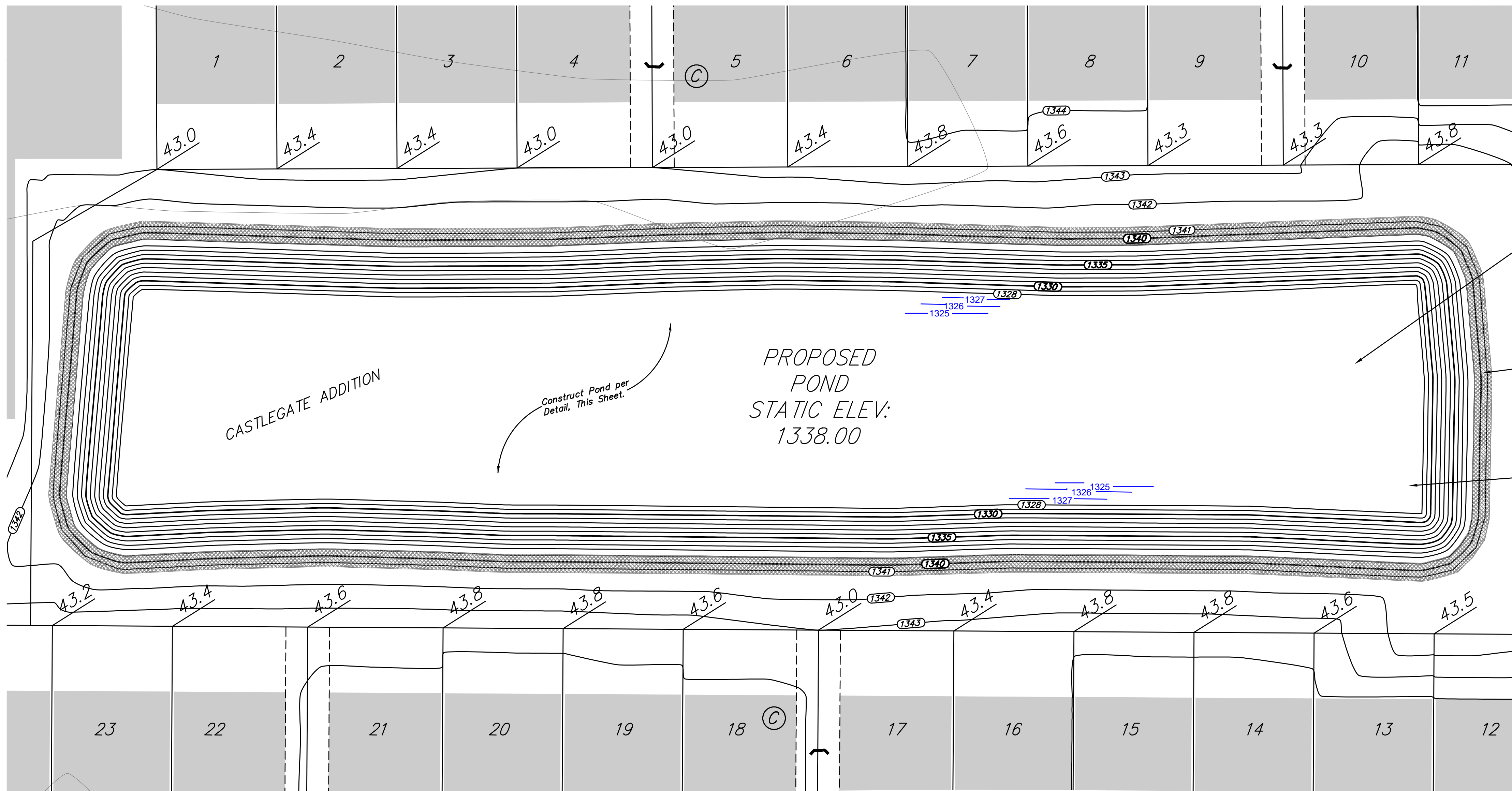
PROJECT NUMBER	DESIGN NBW/JCS	DRAWN JCS
REVISIONS:	APPROVED	DATE 4/7/14
	SCALE 1" = 40'	SHEET

8470
 4/16/14
 WICHITA, KANSAS
 PROFESSIONAL ENGINEER

3 OF 7



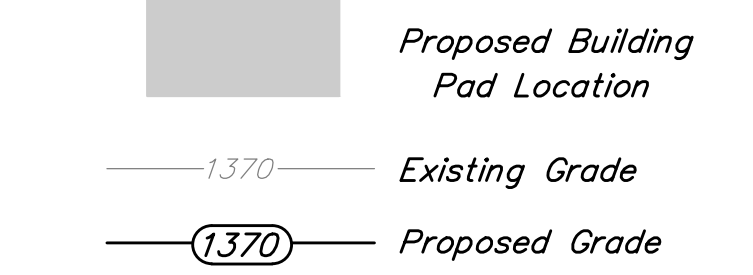
ALBERT
 CENTRAL
 67205



Excavate Detention Pond to proposed elevations per Pond Detail, this sheet. Cost of Excavation to be and all incidentals to the excavation of the pond to be paid as L.S. bid item, "Pond Excavation".

Install 1,556 L.F. of 8' wide Erosion Control Matt from an elevation of 1339.30 up at 3:1 slope.

Compact pond bottom and pond sides, to static surface elevation. Compacted Pond Liner, both bottom and sides, to be constructed at a depth of 1'.



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 #4 REBAR ALONG EXISTING FENCE LINE NEAR SWS CORNER OF LOT 11 BLOCK A, CASTLEGATE ADDITION. ELEV. = 1343.56

- POND NOTES:**
 Pond bottom and sideslopes below static water surface shall be compacted for 1' of a 1' clay liner and shall be compacted to 95% std. density. P.I. determination and compaction testing shall be arranged by the Owner. Compaction testing shall be compacted at 95% standard density.
- All of pond bank above the static water surface disturbed by construction shall be seeded and mulched as follows:
 (Permanent Seeding)
SEED -- Kansas Premium Fescue Blend; 8#/1000 Sq. Ft.
FERTILIZER -- 12-24-12 Ratio at 350 Lbs./Ac.
MULCH -- 2 Tons Prairie Hay / Acre

 All other disturbed areas not in street R/W are to be seeded as follows: (Temporary Seeding)
SEED -- Rye grass (PLS)--5#/1000 Sq. Ft. and Kansas Premium Fescue Blend; 5#/1000 Sq. Ft.
 All costs associated with seeding including perpetration of ground, seeding, fertilizing, mulching, etc. shall be including in the L.S. bid item "Project Seeding and Erosion Control"
 - Contractor shall strip top 6" of soil before mass grading and stockpiled in Lot 1, Block A. Top soil stockpile to be redistributed prior to seeding.
 - Compaction of 95% std. proctor density shall be obtained in all areas.
 - Quantities reflect the best available topography at time of design. The Contractor shall satisfy himself with the Earthwork Quantities associated with L.S. Bid Item "Mass Grading" prior to bidding. No additional payments or change orders for earthwork will be accepted.

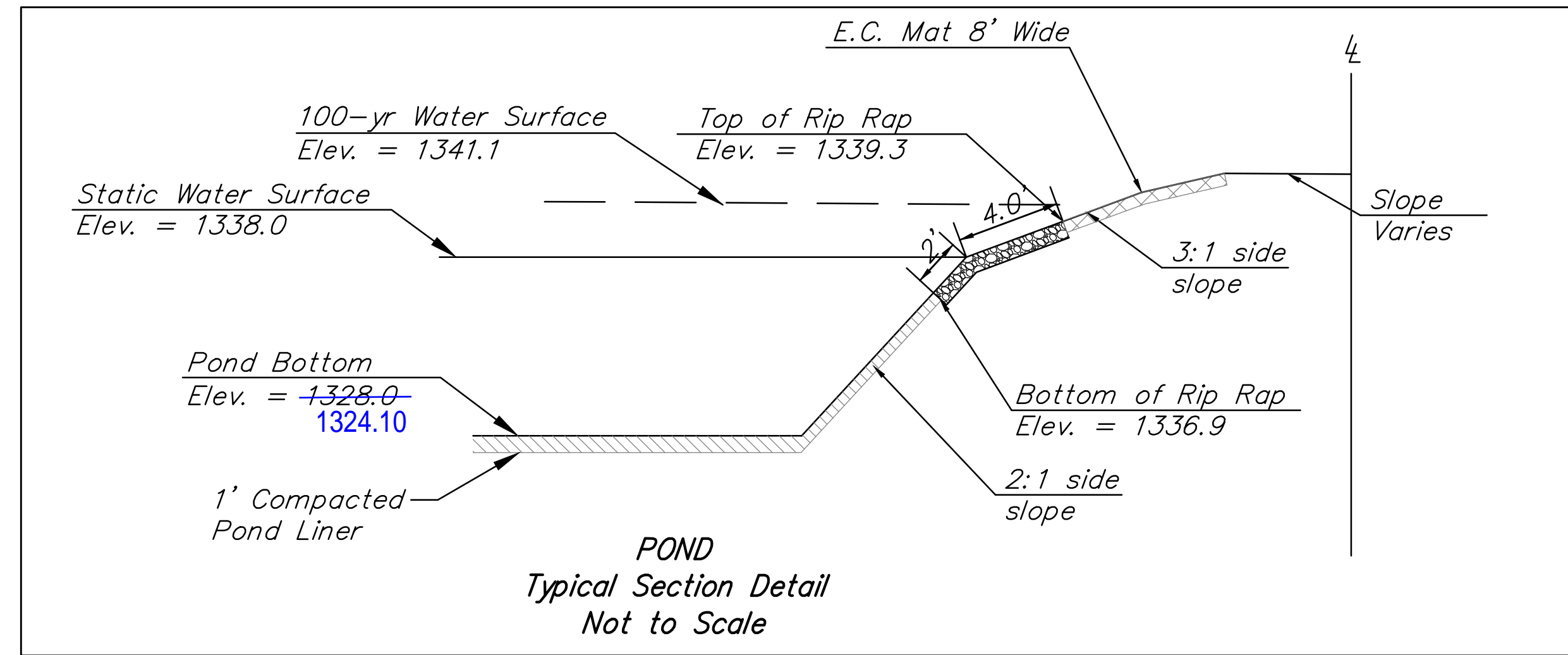


Table 4-13 Volumetric Runoff Coefficients by Land Use and Hydrologic Soil Group

Land Use	Hydrologic Soil Group				Land Use	Hydrologic Soil Group			
	A	B	C	D		A	B	C	D
Undisturbed	0.02	0.03	0.04	0.05	Undisturbed	55	71	80	84
Turf or Disturbed Soils	0.15	0.20	0.22	0.25	Turf or Disturbed Soils	71	80	84	88
Impervious Cover	0.95	0.95	0.95	0.95	Impervious Cover	98	98	98	98

Weighted Volumetric Runoff Coef. (R_v) (eq. 4-24*)

Basin #	Undist.				Dist.				Red. Imp.				Total Area ft ²	U	D	Redev. I	I	R _v	WQ _v ft ³ eq. 4-25*
	ft ²	ft ²	ft ²	ft ²	ft ²	ft ²	ft ²	ft ²	%	%	%	%							
Total Site	0	468,270	0	468,270	0	468,270	0	468,270	936,540	0.000	0.125	0.000	0.475	0.6000				56,192	
CN		42		49		49		91											

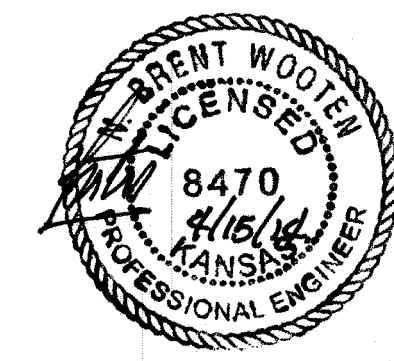
Pond Volume Below Static Pool

Basin	Static		Pond Bottom Area		Depth Feet	Volume Acre-Ft.
	Sq.Ft.	Acre	Sq. Ft.	Acre		
Pond	80000	1.8	58000	1.3	10	15.8
Totals:		1.8		1.3		15.8

Pond Volume > WQ_v Check

Pond	WQ _v	Check
15.8	1.3	Yes

The proposed pond is approximately 3.5 acres in surface area and is not included in the total basin area. Basins 19 & 20 will flow from the site untreated. To make up for this, the onsite detention pond will accept and treat the same area from Basins 27 & 28 from developed offsite to offset the aforementioned untreated flow.



Castlegate Addition
POND PLAN
 Wichita, Kansas

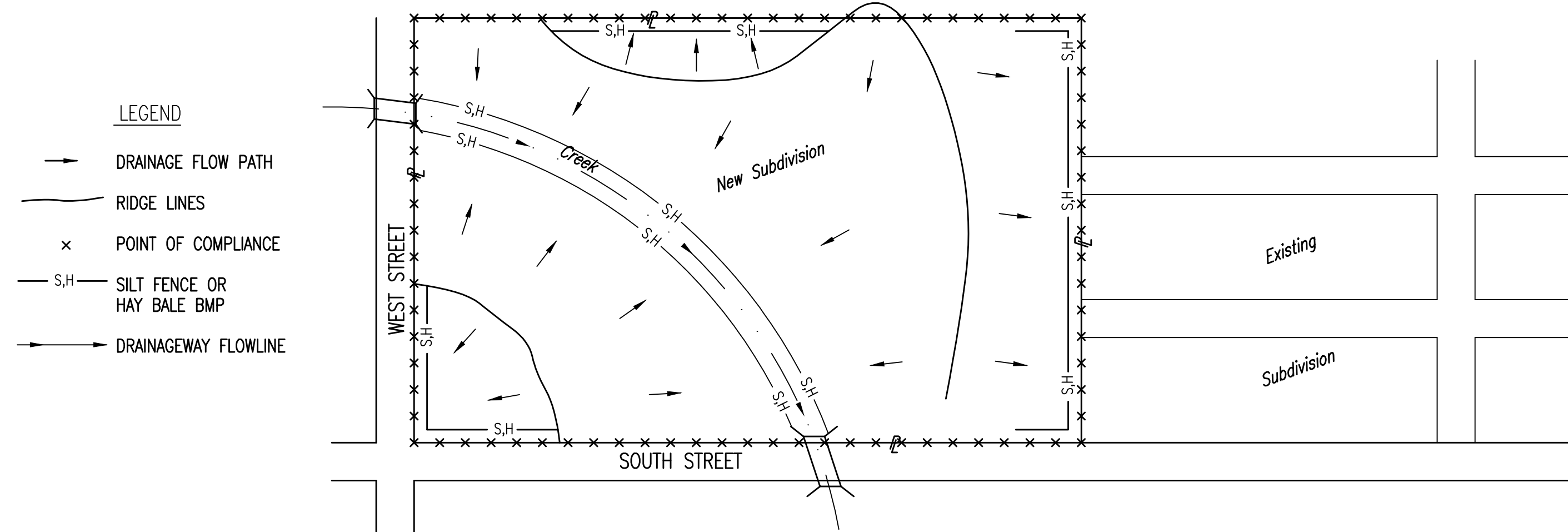
Baughman
 Engineering / Surveying / Planning / Landscape Architecture

PROJECT NUMBER: _____
 REVISIONS: _____

DESIGN: NBW/JCS
 DRAWN: JCS
 APPROVED: _____
 DATE: 4/7/14

SCALE: 1" = 40'
 SHEET: 4 OF 7

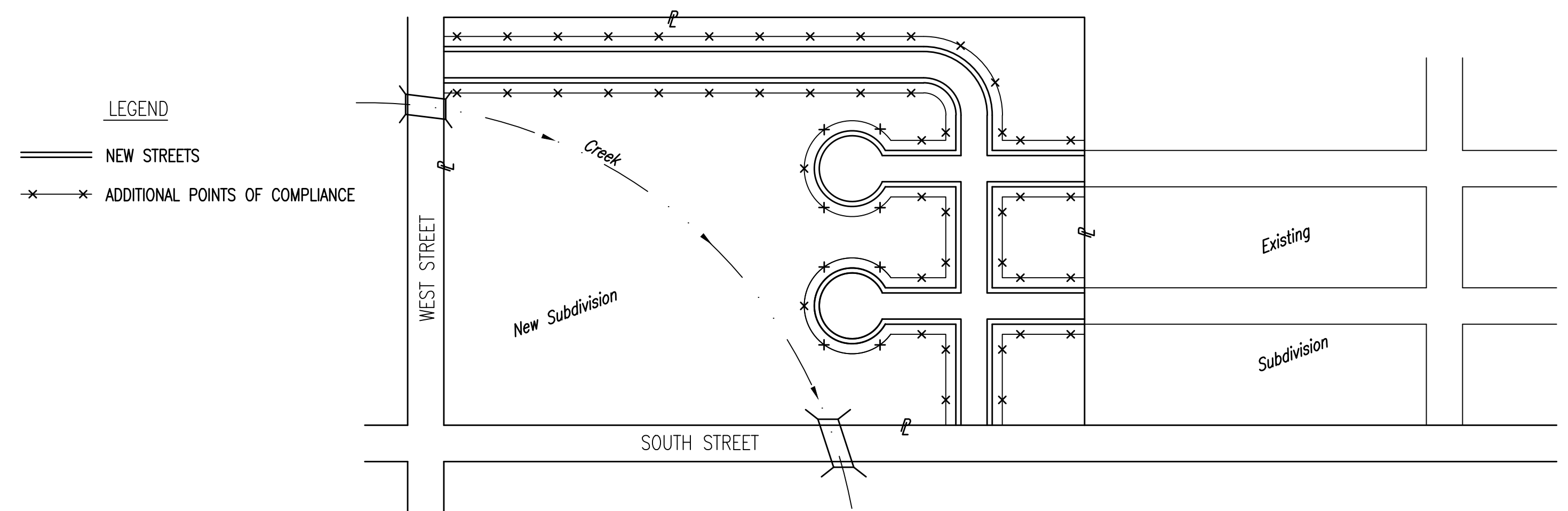
PHASE 1 – INITIAL EARTHWORK AND UTILITIES (EXCEPT STORM SEWER)



- LEGEND**
- DRAINAGE FLOW PATH
 - RIDGE LINES
 - x POINT OF COMPLIANCE
 - S,H SILT FENCE OR HAY BALE BMP
 - DRAINAGEWAY FLOWLINE

1. DURING THIS PHASE OF SUBDIVISION CONSTRUCTION, THE POINTS OF COMPLIANCE ARE THE PERIMETER BOUNDARIES AND ANY DRAINAGE WAYS OR STORM SEWERS DRAINING THROUGH OR FROM THE SITE. SHOULD LAKES BE CONSTRUCTED WITHIN THE SUBDIVISION THAT WILL DISCHARGE DURING STORMS, THEY ARE ALSO A POINT OF COMPLIANCE.
2. HAYBALES OR SILT FENCE MUST BE CONSTRUCTED ALONG THE PROPERTY LINE WHERE ON SITE WATER CAN DRAIN OFF THE PROPERTY. THESE BMP'S WILL ALSO BE INSTALLED ALONG ANY DRAINAGE DITCH OR LAKE THAT CAN DISCHARGE.
3. SHOULD SILT OR SEDIMENT ENTER THE DITCHES OR GUTTERLINES ON THE ADJACENT BOUNDARY STREETS, APPROPRIATE BMP'S WILL BE PLACED WITHIN THE SUBDIVISION TO PREVENT THIS.
4. ANY MUD TRACKED ONTO ADJACENT STREETS WILL BE REMOVED AT THE END OF EACH WORK DAY.
5. CONTRACTORS WORKING WITHIN THE SITE WILL NOT BE REQUIRED TO USE INDIVIDUAL BMP'S AS LONG AS THOSE SPECIFIED ABOVE ARE IN PLACE AND EFFECTIVE. CONTRACTORS WORKING ON THE BOUNDARY LINE STREETS OR ON ADJACENT PROPERTIES TO EXTEND UTILITIES ARE EXPECTED TO USE BMP'S AT THEIR WORK LOCATIONS, AS NEEDED.
6. UTILIZE STABILIZED CONSTRUCTION ENTRANCE AT ENTRANCE AND EXIT ONTO ANY EXISTING PUBLIC STREETS.
7. THE SUBDIVISION DEVELOPER (OWNER) SHALL INSTALL AND MAINTAIN THE ON-SITE BMP'S.

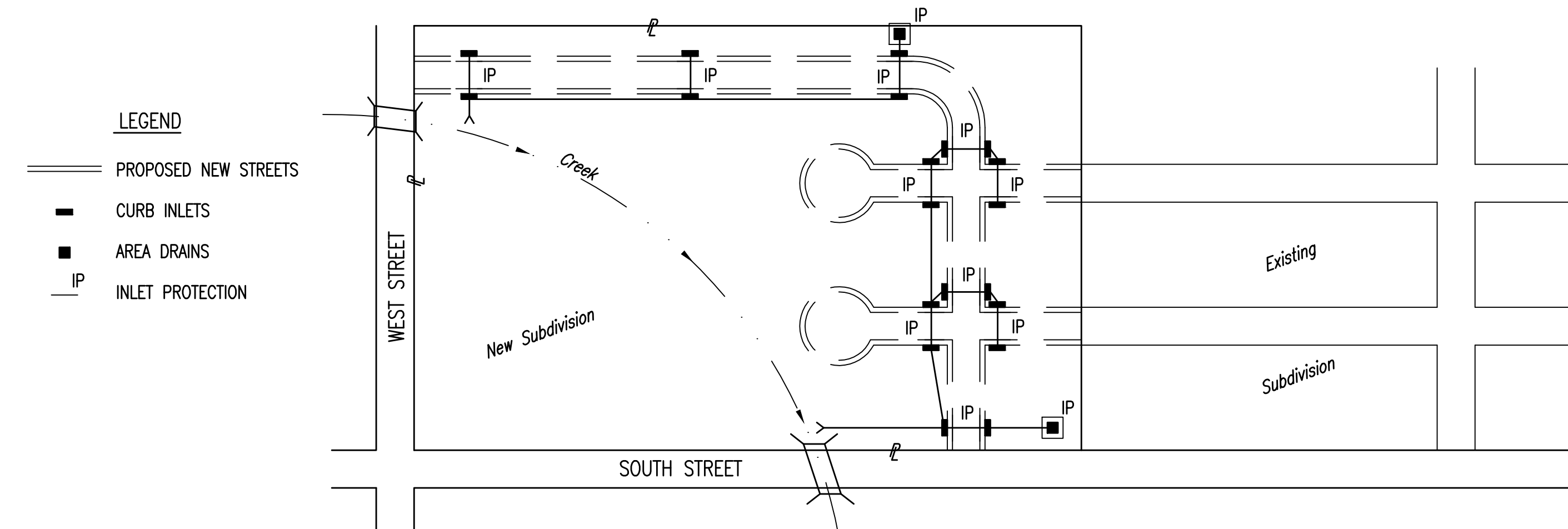
PHASE 3 – STREET CONSTRUCTION



- LEGEND**
- == NEW STREETS
 - x-x-x ADDITIONAL POINTS OF COMPLIANCE

1. DURING THIS PHASE OF SUBDIVISION CONSTRUCTION, NEW STREETS ARE INSTALLED. ALL BMP'S INSTALLED DURING PHASE 1 AND 2 MUST STILL BE MAINTAINED. THE POINT OF COMPLIANCE NOW SHIFTS TO THE BACK OF CURB ALONG EACH STREET.
2. CURB OPENING INLET PROTECTION:
 - A. SUMP AREAS – INLET PROTECTION SHALL BE PROVIDED WHEN STREET SUBGRADE WORK IS COMPLETED.
 - B. NON-SUMP LOCATIONS – PROVIDE INLET PROTECTION AS SOON AS BASE COURSE ASPHALT IS INSTALLED, BEFORE THE SURFACE COURSE LIFT.
3. BMP'S WILL BE REQUIRED BACK OF CURB WHEREVER WATER CAN FLOW OVER THE CURB AND THE CURB HAS BEEN BACKFILLED TO WITHIN 3" OR LESS OF THE TOP OF CURB (SEE CURB BACKFILL DETAIL). FOR CURBS NOT YET ENTIRELY BACKFILLED (3" OR MORE BELOW TOP OF CURB), BMP'S WILL BE REQUIRED AT POINTS WHERE WATER BREAKS OVER CURB WHICH COULD RESULT IN THE PLACEMENT OF SEDIMENT IN THE GUTTER.
4. SEE DETAIL THIS SHEET ON BACK OF CURB PROTECTION.
5. THE BACK OF CURB PROTECTION SPECIFIED ON THIS PLAN MAY HAVE TO BE SUPPLEMENTED WITH HAYBALE OR SILT FENCE BMP'S AT LOCATIONS WHERE CONCENTRATED FLOW RESULTS IN SEDIMENT BEING CARRIED OVER THE EXCELSIOR MATS.
6. THE STREET CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING BACK OF CURB BMP'S.
7. THE INDIVIDUAL LOT OWNERS WILL BE RESPONSIBLE FOR MAINTAINING THE BACK OF CURB BMP'S IN FRONT OF THEIR LOTS UNTIL SUCH TIME AS ADJACENT DISTURBED EARTH IS STABILIZED WITH GRASS OR SOD.

PHASE 2 – INSTALLATION OF STORM SEWER



- LEGEND**
- == PROPOSED NEW STREETS
 - CURB INLETS
 - AREA DRAINS
 - IP INLET PROTECTION

1. DURING THIS PHASE OF SUBDIVISION DEVELOPMENT, ALL BMP'S REQUIRED IN PHASE 1 SHALL REMAIN IN PLACE AND BE MAINTAINED.
2. AS NEW STORM SEWERS, WITH INLETS, ARE INSTALLED, THE STORM SEWERS MUST NOW BE PROTECTED SO ALL NEW INLETS BECOME POINTS OF COMPLIANCE.
3. AREA DRAINS – AS SOON AS WATER CAN FLOW INTO THESE DRAINS, HAYBALE OR SILT FENCE PROTECTION WILL BE INSTALLED AROUND THEM.
4. CURB OPENING INLETS – AS SOON AS WATER CAN FLOW INTO THESE DRAINS, INLET PROTECTION BMP'S MUST BE INSTALLED. SEE PHASE 3 – STREET CONSTRUCTION.
5. THE STORM SEWER CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING THESE BMP'S. IF WATER CANNOT FLOW INTO CURB INLETS UNTIL STREET CONSTRUCTION IS COMPLETE, THEN STREET CONTRACTOR WILL INSTALL INLET PROTECTION.
6. THE SUBDIVISION DEVELOPER WILL MAINTAIN THESE BMP'S ONCE INSTALLED.
7. ONCE ALL DISTURBED GROUND DRAINING TO AN INLET HAS BEEN RESTABILIZED WITH GRASS OR SOD, THE SUBDIVISION DEVELOPER WILL BE RESPONSIBLE FOR PERMANENTLY REMOVING THE INLET PROTECTION.

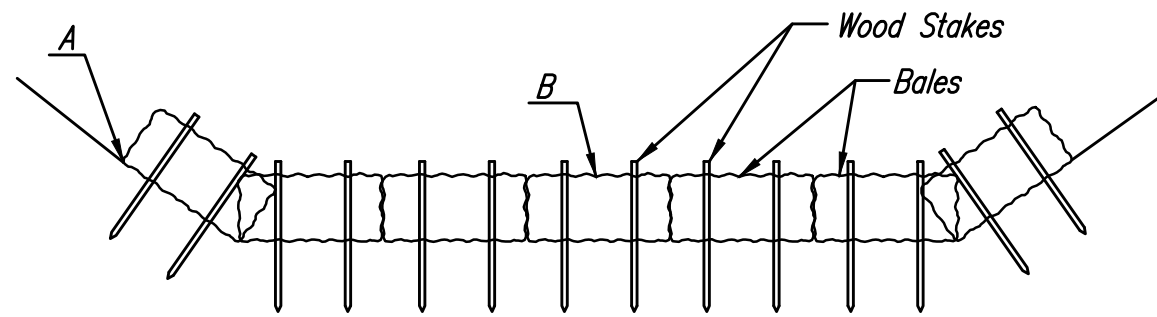
GENERAL NOTES:

1. THE INTENT OF ALL BEST MANAGEMENT PRACTICES (B.M.P.'S) IS TO PREVENT ERODED SOIL FROM ENTERING DITCHES, STORM SEWERS, OR ANY OTHER DRAINAGE FEATURE.
2. THIS SHEET IS INTENDED TO PROVIDE GUIDELINES AS TO WHAT TYPE OF BMP'S WILL BE INSTALLED DURING THE CONSTRUCTION PROCESS. CONTRACTORS ARE EXPECTED TO BID PROJECTS ACCORDINGLY.
3. BMP'S SHALL BE MAINTAINED DURING THE CONSTRUCTION PROCESS TO REMAIN EFFECTIVE. MAINTENANCE SHALL BE AS INDICATED ON THE BMP DETAIL SHEETS.
4. PERSONS DESTROYING BMP'S SHALL BE RESPONSIBLE FOR IMMEDIATELY REPAIRING THEM OR INSTALLING SUITABLE REPLACEMENT BMP'S.
5. THE DEVELOPMENT OF ANY SUBDIVISION THAT DISTURBS 5 ACRES OR MORE WILL REQUIRE A FEDERAL/STATE NPDES STORMWATER PERMIT. THE PREPARATION OF A STORMWATER POLLUTION PREVENTION PLAN IS REQUIRED. EROSION CONTROL BMP'S ARE REQUIRED. THE DETAILS SHOWN ON THIS SHEET ARE THE MINIMUM STANDARDS TO BE SHOWN ON POLLUTION PREVENTION PLAN.
6. FOR SUBDIVISIONS SMALLER THAN 5 ACRES, SOIL EROSION BMP'S ARE REQUIRED. ALSO, DEVELOPERS AND CONTRACTORS ARE ENCOURAGED TO DEVELOP POLLUTION PREVENTION PLANS FOR EACH PROJECT PRIOR TO CONSTRUCTION.
7. FAILURE TO USE AND MAINTAIN BMP'S IS A VIOLATION OF SECTION 16.32 OF THE CITY CODE AND WILL SUBJECT THE SUBDIVISION DEVELOPER AND CONTRACTORS TO THE PENALTIES PROVIDED THEREIN.
8. THE APPLICATION OF BMP'S SHOWN ON THIS SHEET IS FOR SITUATIONS NORMALLY ENCOUNTERED. FROM TIME TO TIME, SITUATIONS WILL ARISE THAT MAY REQUIRE A DIFFERENT BMP OTHER THAN THAT SHOWN. BMP'S, OTHER THAN THOSE SHOWN, MAY BE UTILIZED SO LONG AS THEY ARE EFFECTIVE AND MAINTAINED.
9. A STABILIZED EARTH SURFACE IS DEFINED AS ONE THAT IS HARD SURFACED WITH CONCRETE, ASPHALT, OR THE LIKE, OR ONE ON WHICH 70% OF THE GRASS HAS GERMINATED ON THE ENTIRE SURFACE.

		Erosion Control BMP Details	
Baughman Company, P.A. 315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149 ENGINEERING SURVEYING PLANNING LANDSCAPE ARCHITECTURE			
PROJECT NUMBER	DESIGN Staff	DRAWN Staff	
REVISIONS:	APPROVED	DATE	4/7/14
	SCALE	None	
	SHEET	5 OF 7	



NOTE: Point A must be higher than Point B so that water flows over the bales and not around them.



STRAW BALE DITCH CHECKS

Material Specification:
 Bale ditch checks may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Optional: The downstream scour apron should be constructed of a double-netted straw erosion-control blanket at least 6' wide. Optional: The metal landscape staples used to anchor the erosion-control blanket should be at least 8" long.

Placement:
 Bale ditch checks should be placed perpendicular to the flowline of the ditch. The ditch check should extend far enough so that the ground level at the ends of the check is higher than the top of the lowest center bale. This prevents water from flowing around the check. Straw bale ditch checks should not be placed in ditches where high flows are expected. Rock checks should be used instead. Bales should be placed in ditches with slopes of 6% or less. For slopes steeper than 6%, rock checks should be used. The following table provides check spacing for a given ditch grade:

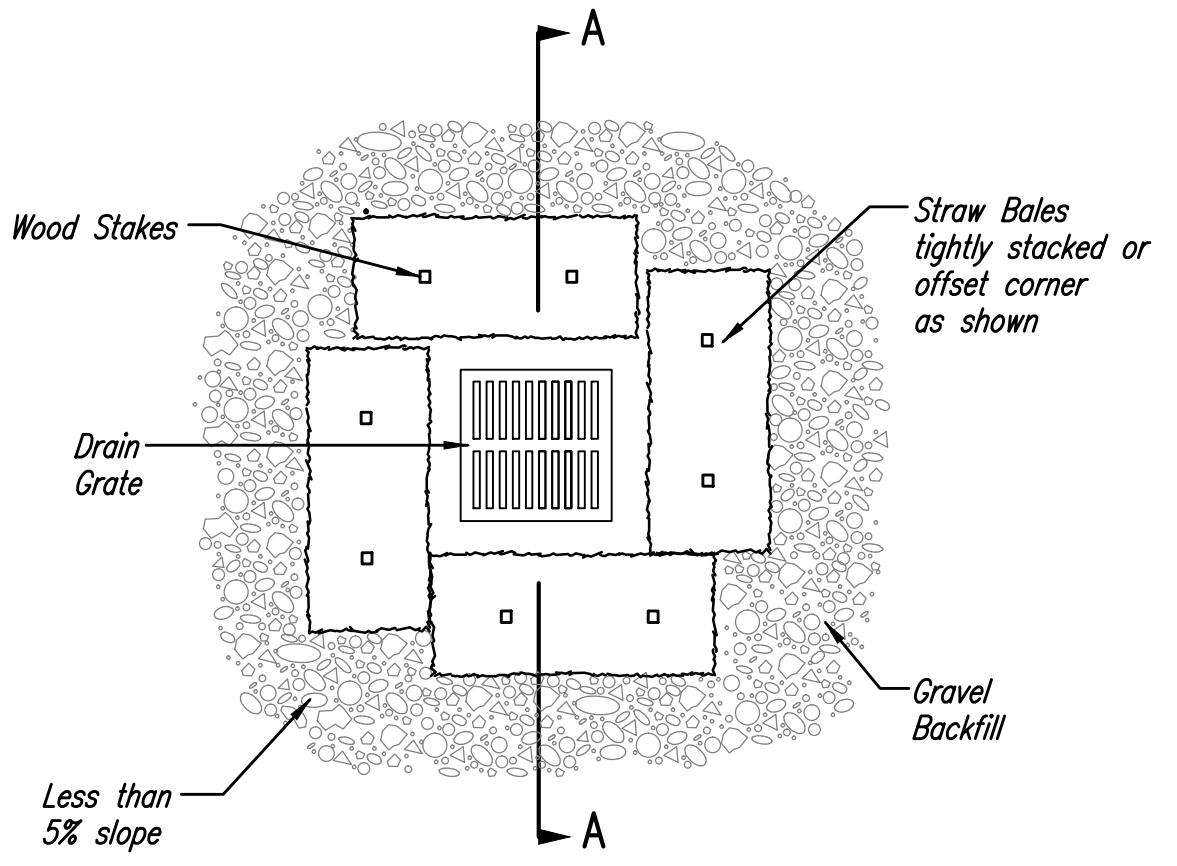
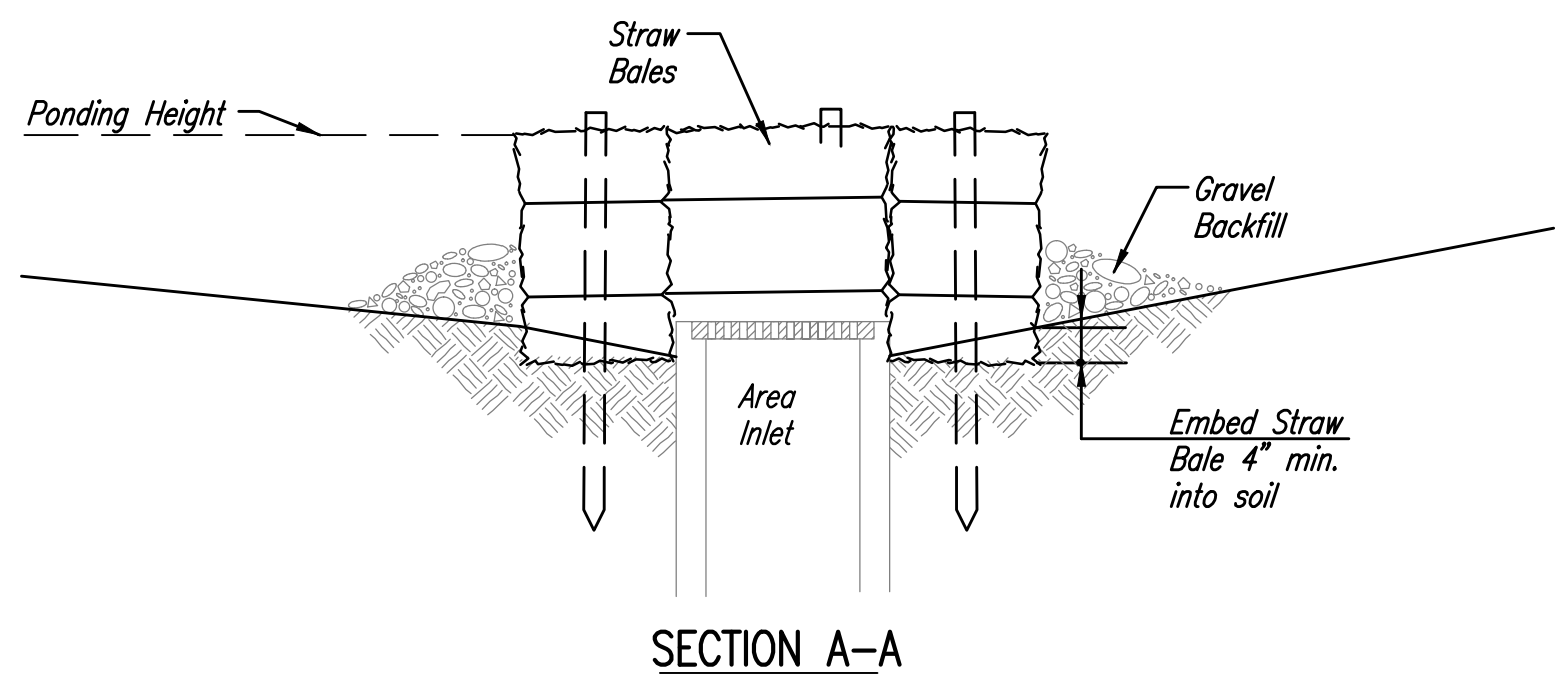
Ditch grade (%)	Check Spacing (feet)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

Proper installation method:
 Excavate a trench perpendicular to the ditch flowline that is 4" deep and a bale's width wide. Extend the trench in a straight line along the entire length of the proposed ditch check. Place the soil on the upstream side of the trench—it will be used later. Optional: On the downstream side of the trench, roll out a length of erosion-control blanket (scour apron) equal to the length of the trench. Place the upstream edge of the erosion-control blanket along the bottom upstream edge of the trench. The erosion control blanket should be anchored in the trench with one row of 8" landscape staples placed on 18" centers. The remainder of the erosion-control blanket (the portion that is not lying in the trench) will serve as the downstream scour apron. This section of the blanket should be anchored to the ground with 8" landscape staples placed around the perimeter of the blanket on 18" centers. The remainder of the blanket should be anchored using two evenly spaced rows of 8" landscape staples on 18" centers placed perpendicular to the flowline of the ditch. Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the upstream side of the check and compact it. The compacted soil should be no more than 3" to 4" deep and extend upstream no more than 24".

List of common placement/installation mistakes to avoid:
 Do not place a bale ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow.
 Do not place bale ditch checks in ditches that will likely experience high flows. They will not stand up to concentrated flow.
 Follow prescribed ditch-check spacing guidelines. If spacing guidelines are exceeded, erosion will occur between the ditch checks.
 Do not allow water to flow around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the check is higher than the top of the lowest center bale.
 Do not place bale ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.
 Bale ditch checks must be dug into the ground. Bales at ground level do not work because they allow water to flow under the check.

Inspection and Maintenance:
 Bale ditch checks should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow around the ditch check?
- Does water flow under the ditch check?
- Does water flow through spaces between abutting bales?
- Are any bales and/or scour aprons (optional) dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the ditch check?



STRAW BALE BARRIERS FOR AREA INLETS (INLET PROTECTION)

Material Specification:
 Bale area inlet barriers should be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Twine should be used to bind bales. The use of wire binding is prohibited because it does not biodegrade readily.

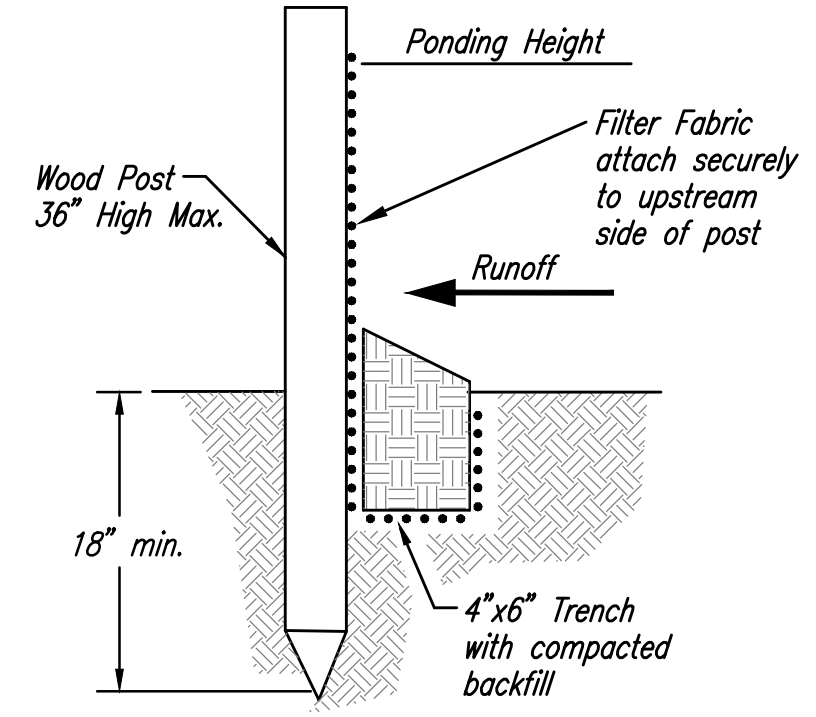
Placement:
 Bale area inlet barriers should be placed directly around the perimeter of a drop inlet. When a bale area inlet barrier is located near an inlet that has steep approach slopes, the storage capacity behind the barrier is drastically reduced. Timely removal of sediment must occur for a barrier to operate properly in this location.

Proper Installation Method:
 Excavate a trench around the perimeter of the area inlet that is at least 4" deep by a bale's width wide. Place the bales in the trench, making sure that they are butted tightly. Some bales may need to be shortened to fit into the trench around the area inlet. Two stakes should be driven through each bale, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the receiving side of the barrier and compact it. The compacted soil should be no more than 3" to 4" deep.
 Note: When a bale area inlet barrier is placed in a shallow median ditch, make sure that the top of the barrier is not higher than the paved road. In this configuration, water may spread onto the roadway causing a hazardous condition.

List of common placement installation mistakes to avoid:
 Bales should be placed directly against the perimeter of the area inlet. This allows overtopping water to flow directly into the inlet instead of onto nearby soil causing scour. Bale area inlet barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

Inspection and Maintenance:
 Bale area inlet barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow under the area inlet barrier?
- Does water flow through spaces between abutting bales?
- Are any bales dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the area inlet barrier?



SILT FENCE BARRIERS

Material Specification:
 Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Silt fence fabric should be attached to the wooden posts with staples, wire, zip ties, or nails.

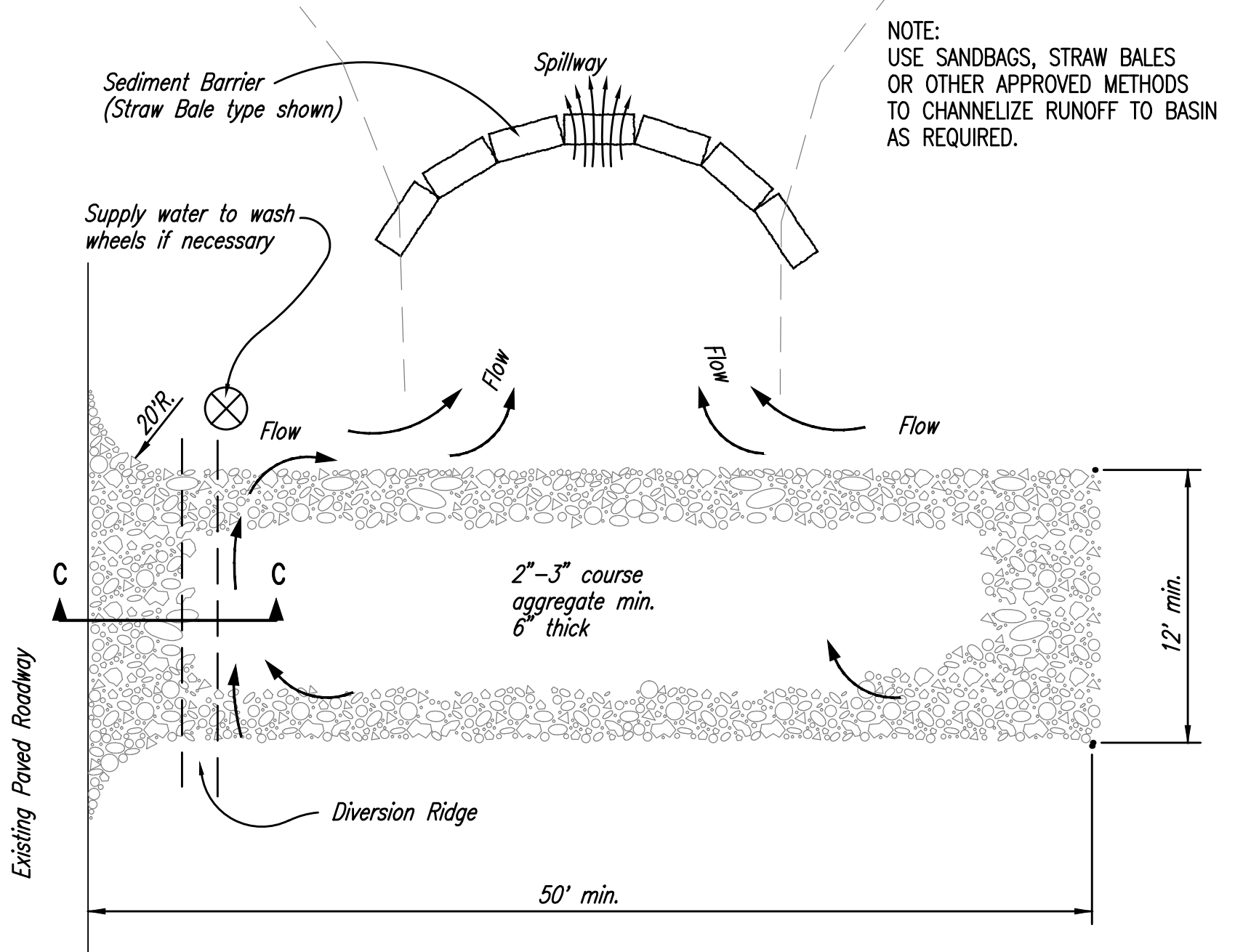
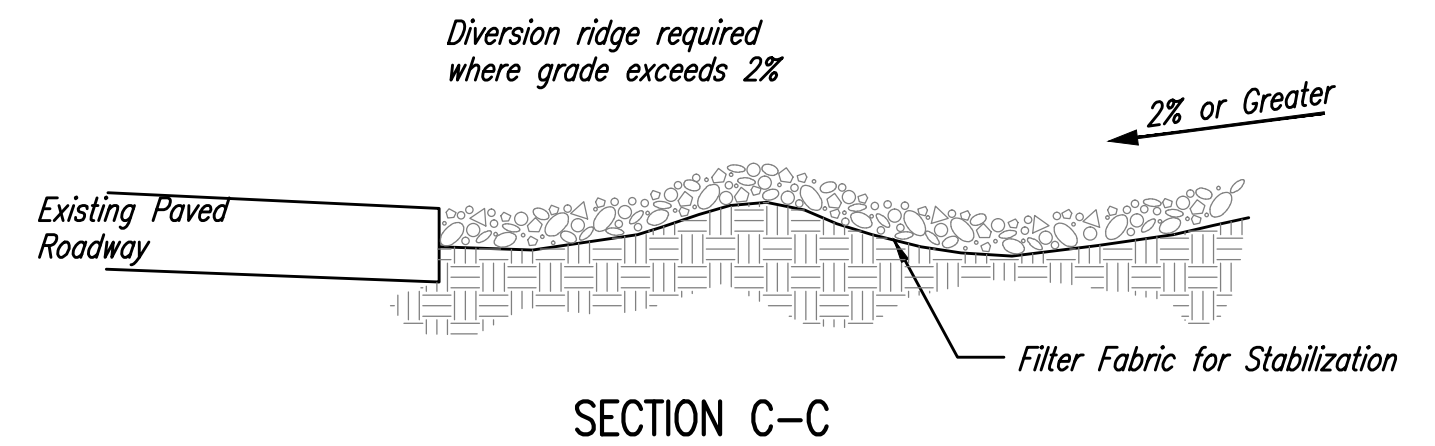
Placement:
 A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment. When practicable, silt fence slope barriers should be placed along contours to avoid a concentration of flow. Silt fence slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

Proper installation method:
 Excavate a trench the length of the planned slope barrier that is 6" deep by 4" wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use. Roll out a continuous length of silt fence fabric on the downslope side of the trench. Place the edge of the fabric in the trench starting at the top upslope edge. Line all three sides of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt-fence fabric should remain exposed. Lay the exposed silt fence upslope of the trench to clear an area for driving in the posts. Just downslope of the trench, drive posts into the ground to a depth of at least 18". Place posts no more than 4' apart. Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

List of common placement/installation mistakes to avoid:
 When practicable, do not place silt fence slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. When the flow concentrates, it overtops the barrier and the silt fence slope barrier quickly deteriorates. Do not place silt-fence posts on the upslope side of the silt fence fabric. In this configuration, the force of the water is not restricted by the posts, but only by the staples (wire, zip ties, nails, etc.). The silt fence will rip and fail. Do not place silt fence slope barriers in areas with shallow soils underlain by rock. If the barrier is not sufficiently anchored, it will wash out. Silt fence slope barriers must be dug into the ground—silt fence at ground level does not work because water will flow underneath.

Inspection and Maintenance:
 Silt fence slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Do the silt fences sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the slope barrier?



STABILIZED CONSTRUCTION ENTRANCE

- NOTES:
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 - WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 - WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN, AS SHOWN ABOVE.
 - DRIVE ENTRANCES ONTO RESIDENTIAL LOTS WILL NOT BE REQUIRED TO HAVE THE SEDIMENT BARRIER SHOWN, BUT WHEEL WASHING MAY BE REQUIRED IF STABILIZED ENTRANCE IS NOT SUFFICIENT TO KEEP MUD FROM BEING TRACKED ONTO ADJACENT STREET. ENTRANCE SHALL EXTEND FROM BACK OF CURB TO DWELLING.

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