

37th STREET NORTH ASPHALT MAT PAVING

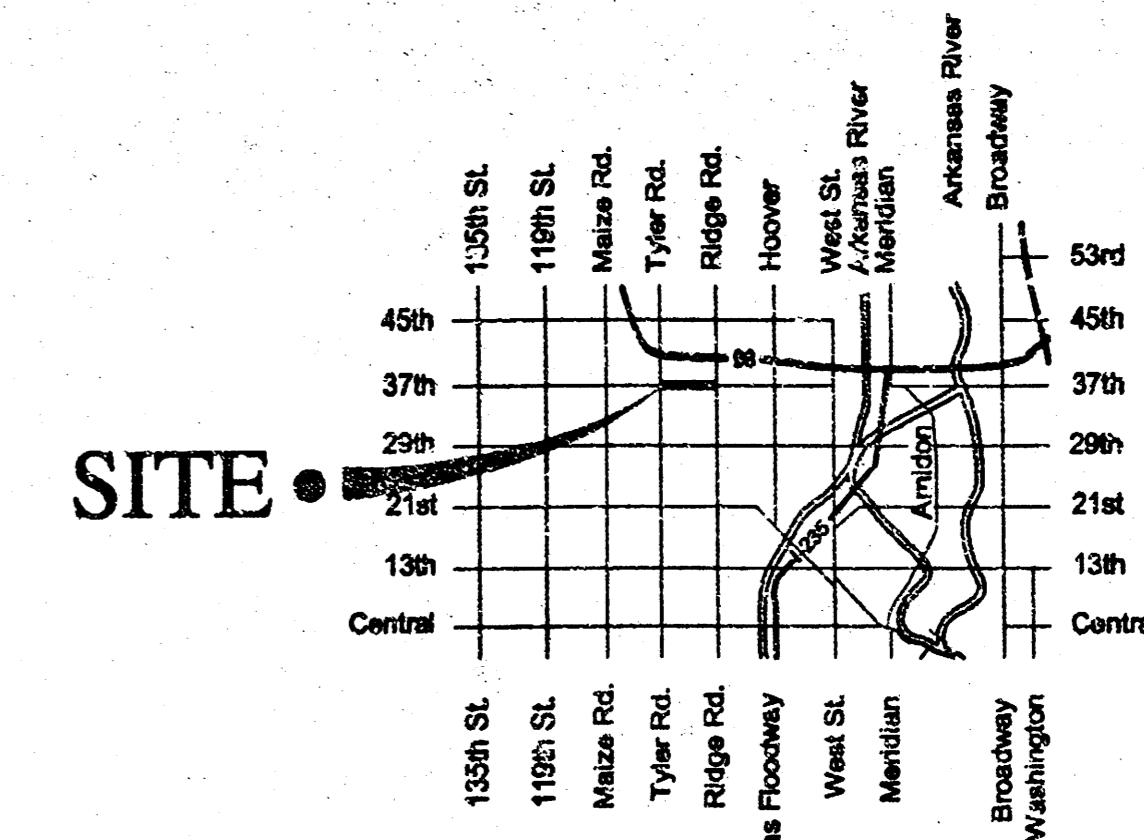
TYLER TO RIDGE

Project No.'s 472-83948

O.C.A. No. 765851

CITY OF WICHITA, KANSAS

James L. Armour, P.E. Acting City Engineer

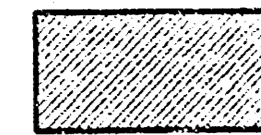


VICINITY MAP

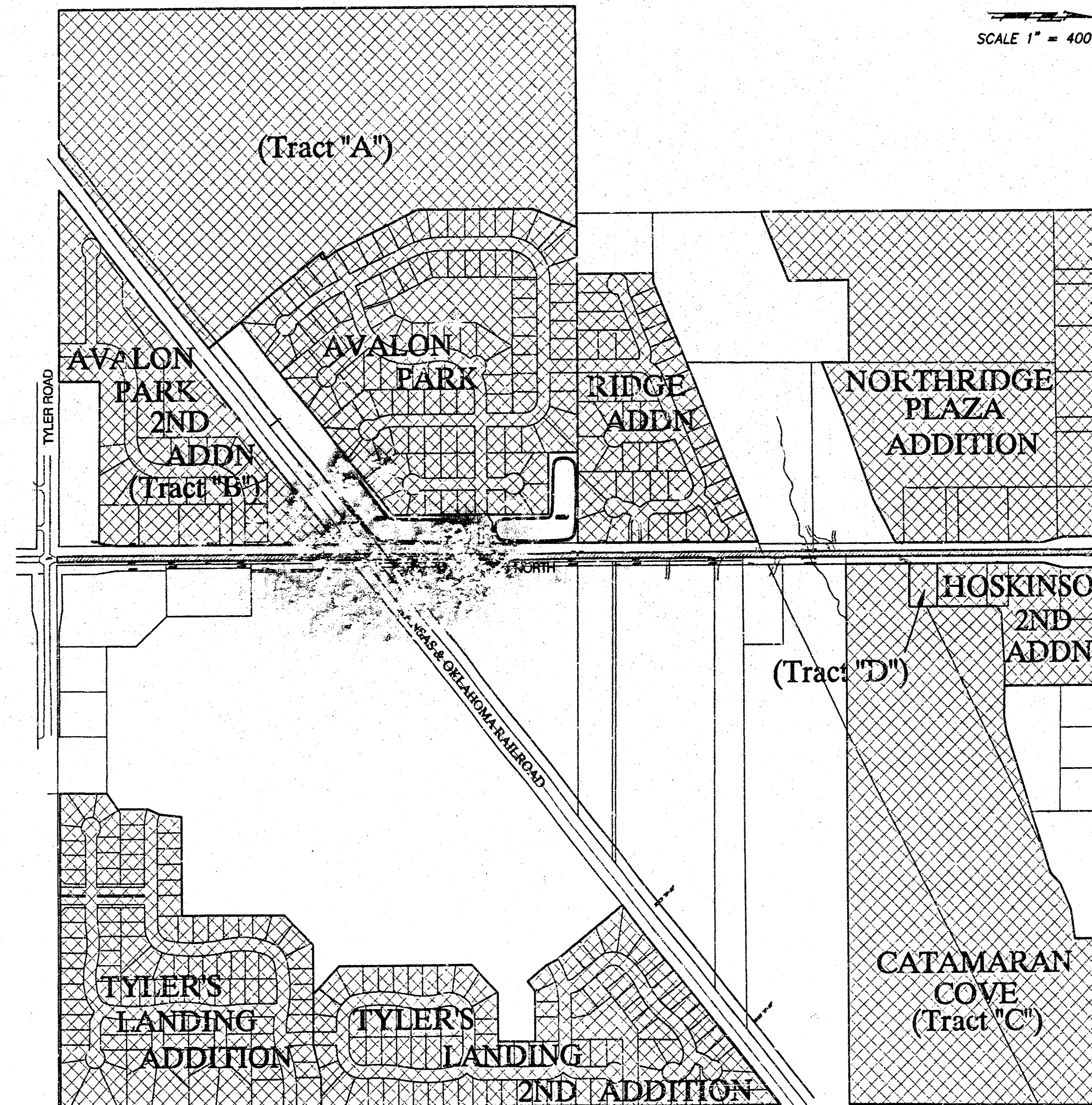
BENEFIT DISTRICT



CONSTRUCTION



SCALE 1" = 400'



Benchmarks

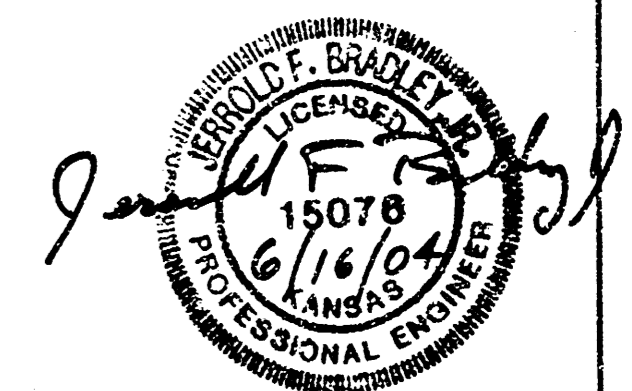
- BM #1
Sedgwick County Benchmark (□) on the south hubguard of the RCBC on 37th Street, 73± west of the center line of Ridge Road
Elevation = 1331.52 MSL Datum
- BM #2
Railroad spike on the north face of power pole on south side of 37th Street at Sta. 57+35±
Elevation = 1331.10 MSL Datum
- BM #3
"X" steel fence corner post footing on the south side of 37th Street at Sta. 49+95±
Elevation = 1329.25 MSL Datum
- BM #4
Railroad spike north face of power pole (with transformer) on south side of 37th Street at Sta. 45+00±
Elevation = 1332.80 MSL Datum
- BM #5
Railroad spike north face of power pole on south side of 37th Street at Sta. 38+38±
Elevation = 1331.55 MSL Datum
- BM #6
Fence T-post driven 4" deep approximately 28 feet right at Sta. 32+00±
Elevation = 1335.69 MSL Datum
- BM #7
"X" cut on the west end of a steel casing pipe culvert at K&O railroad on south side of 37th Street at Sta. 25+75±
Elevation = 1336.58 MSL Datum
- BM #8
Fence T-Post driven 4" deep approximately 25 feet right at Sta. 18+00
Elevation = 1337.73 MSL Datum
- BM #9
"X" southeast corner concrete SBC telephone pad located on the southwest corner of 37th Street and Tyler Road
Elevation = 1342.17 MSL Datum

GENERAL NOTES

1. The Contractor shall not start work on the Project until the Project Inspector is assigned and is present on site. Any work done without inspection will be required to be uncovered for inspection.
2. Pavement Saw Cutting shall be Considered **INCIDENTAL**.
3. Soft Spots shall be excavated, filled with road gravel, compacted, and proof rolled to the Engineer's satisfaction. No additional payment shall be granted for repairing soft spots. Prior to bidding the project, each bidder shall visit the site and satisfy himself of surface & subsurface conditions. Each bidder shall also fully inform himself as to the extent of the scope of work to be performed.
4. The Engineer in charge of construction shall be responsible for preserving the section line monument. The Engineer shall procure a licensed Land Surveyor to take accurate ties to said monument as well as submittal of the required forms to the Dept. of Archives, Kansas State History Society. The Contractor shall set a City survey monument in the required location where said monument falls within the limits of pavement construction. Survey monuments will be furnished by the City. Paid as "Monument Box, Installed" (Each).
5. The Contractor shall be responsible for all traffic control measures to facilitate construction. All Construction Zone markings and signage shall conform to the latest version of the Manual on Uniform Traffic Control Devices (MUTCD) as published by the US Dept. of Transportation, Federal Highway Administration. All costs associated with construction markings and signage shall be **INCIDENTAL** to the lump sum Bid Item "Construction Traffic Control".
6. During Construction of this Project, one lane of traffic in the Eastbound direction shall be maintained at all times. Westbound Traffic may be shut down as necessary to facilitate construction. Appropriate Detour Signage shall be required if Westbound Traffic is to be shut down. Westbound Traffic must be re-opened as construction warrants or during any period of inactivity greater than 48 hours. Access shall be maintained at all times to residents along this Project.
7. The Contractor for this Project shall be required to coordinate with the Water Line Contractor (City Project No. 448-89914) as well as other Projects currently under construction on the North side of 37th. Coordination efforts will not be paid for directly but shall be considered **INCIDENTAL** to other items in the Project.
8. The Contractor shall be responsible for contacting the Kansas & Oklahoma Railroad prior to any work performed within the Track Zone. Contact Herb Lamkin (Roadmaster) at 261-6145 or 263-3113 for notification.

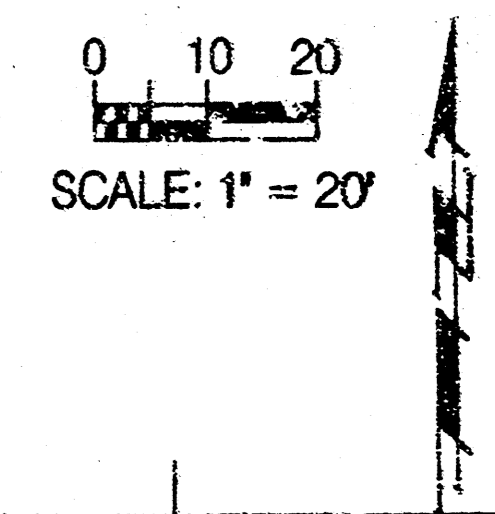
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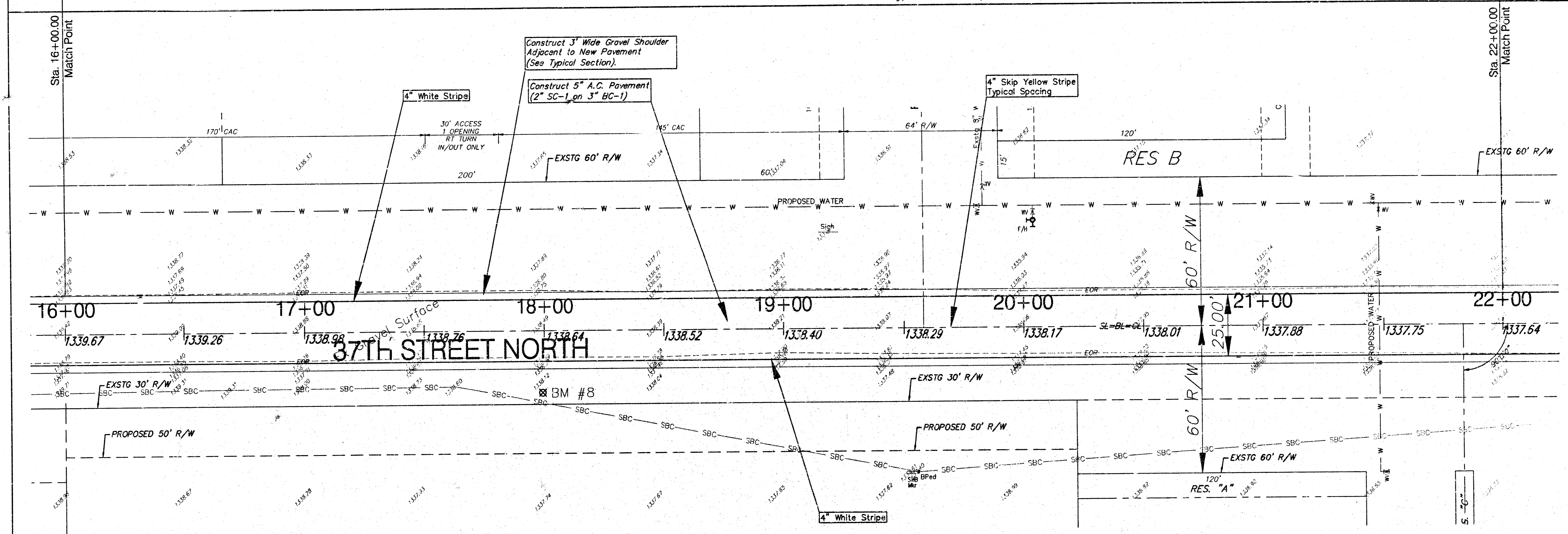


June, 2004

BAUGHMAN COMPANY, P.A.
ENGINEERING, SURVEYING, & PLANNING
316-262-7271 • 315 ELLIS • WICHITA, KANSAS 67211



Typical Section (See Detail)



BENCHMARKS:
 BM #8
 Fence T-Post driven 4\"/>

BM #9
 southeast corner concrete SBC telephone pad located on the southwest corner of 37th Street and Tyler Road
 Elevation = 1342.17 MSL Datum

- GENERAL NOTES - MARKING**
- All pavement markings shall conform to the current standards set forth in the latest publication of the "Manual on Uniform Traffic Control Devices".
 - All pavement markings shall be the "Cold-laid Plastic Tape" type or "Thermoplastic type, (white and yellow), meeting the required specifications of the Engineering Division, City of Wichita, Kansas.
 - Installation of marking tapes on other than new asphaltic concrete pavement (i.e. concrete pavements, existing A.C. surfaces, etc.) shall be accomplished in accordance with installation specifications for cold-laid markings.
 - Where new asphaltic concrete pavement is being constructed, the new pavement markings shall be installed while the new wearing surface is still warm (at least 130°F) and rolled, so as to imprint the pavement markings into the new pavement surface.

PROJECT NUMBER 472-83948	SHEET NAME PAV 02	ENGINEERING DIRECTORY F:\Eng\37th St Ridge to Tyler
DESIGN KK	DRAWN TCA	APPROVED JFB
DATE June 04	SCALE 1" = 20'	BAUGHMAN NO. 04-06-8907

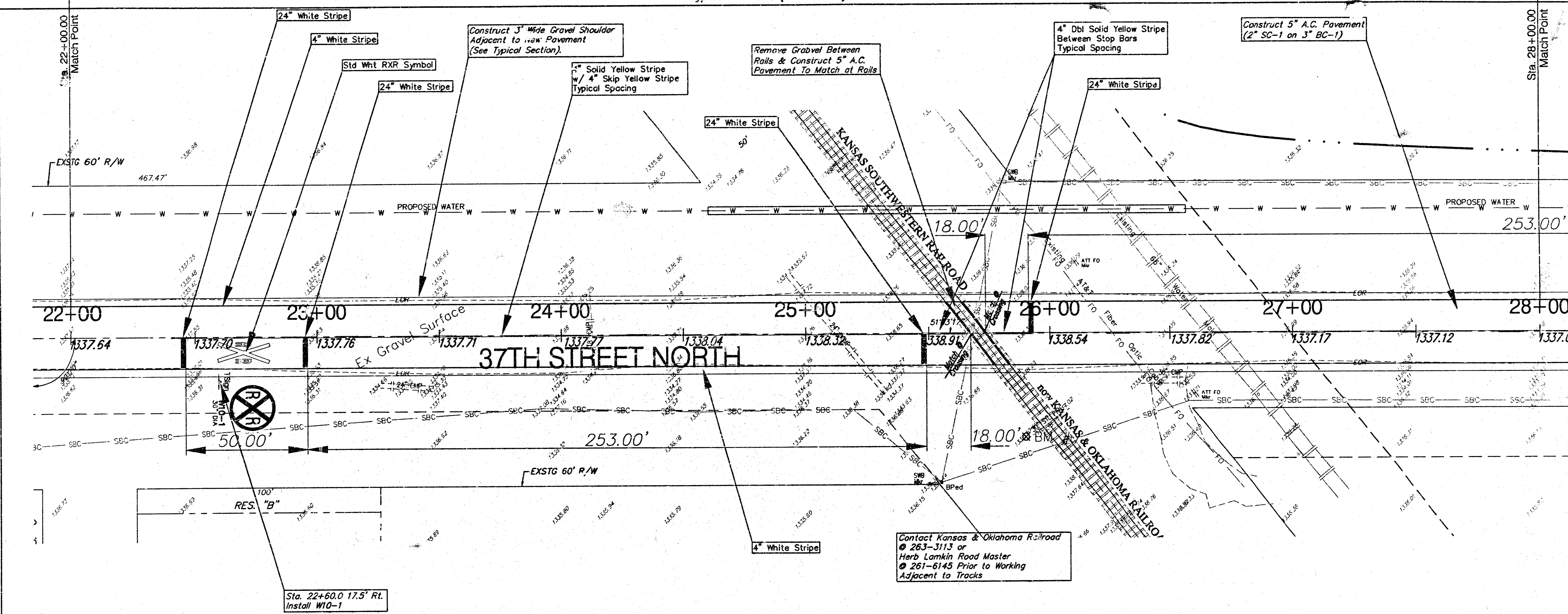
PAVEMENT IMPROVEMENT
 37th ST, TYLER TO RIDGE

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SHEET 3
 OF 12

0 10 20
SCALE: 1" = 20'

Typical Section (See Detail)



BENCHMARKS:
 BM #7
 "X" cut on the west end of a steel casing pipe culvert at K&O railroad on south side of 37th Street at Sta. 25+75±
 Elevation = 1336.58 MSL Datum

- GENERAL NOTES - MARKING**
- All pavement markings shall conform to the current standards set forth in the latest publication of the *Manual on Uniform Traffic Control Devices*.
 - All pavement markings shall be the "Cold-laid Plastic Tape" type or Thermoplastic type, (white and yellow), meeting the required specifications of the Engineering Division, City of Wichita, Kansas.
 - Installation of marking tapes on other than new asphaltic concrete pavement (i.e. concrete pavements; existing A.C. surfaces, etc.) shall be accomplished in accordance with installation specifications for cold-laid markings.
 - Where new asphaltic concrete pavement is being constructed, the new pavement markings shall be installed while the new wearing surface is still warm (at least 130°) and rolled, so as to lay the pavement markings into the new pavement surface.

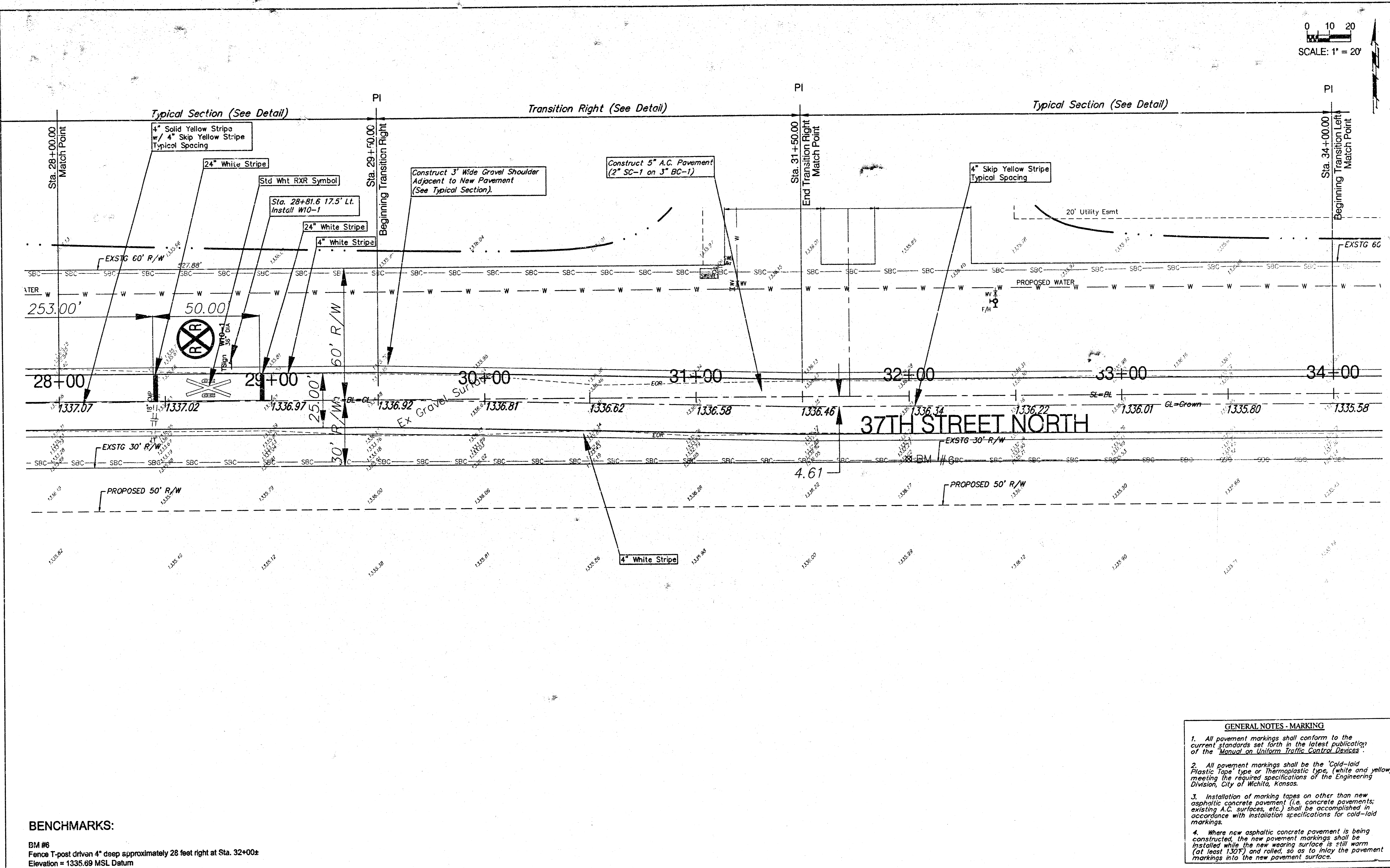
PROJECT NUMBER 472-83948	SHEET NAME PAV 03	ENGINEERING DIRECTORY F:\Eng\37th St Ridge to Tyler
DESIGN KK	DRAWN TCA	APPROVED JFB
DATE June 04	SCALE 1" = 20'	BAUGHMAN NO 04-06-E907

PAVEMENT IMPROVEMENT
 37th ST, TYLER TO RIDGE

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SHEET
4
OF
12

0 10 20
SCALE: 1" = 20'



BENCHMARKS:

BM #6
Fence T-post driven 4" deep approximately 28 feet right at Sta. 32+00±
Elevation = 1335.69 MSL Datum

BM #7
"X" cut on the west end of a steel casing pipe culvert at K&O railroad on south side of
37th Street at Sta. 25+75±
Elevation = 1336.58 MSL Datum

GENERAL NOTES - MARKING

- All pavement markings shall conform to the current standards set forth in the latest publication of the *Manual on Uniform Traffic Control Devices*.
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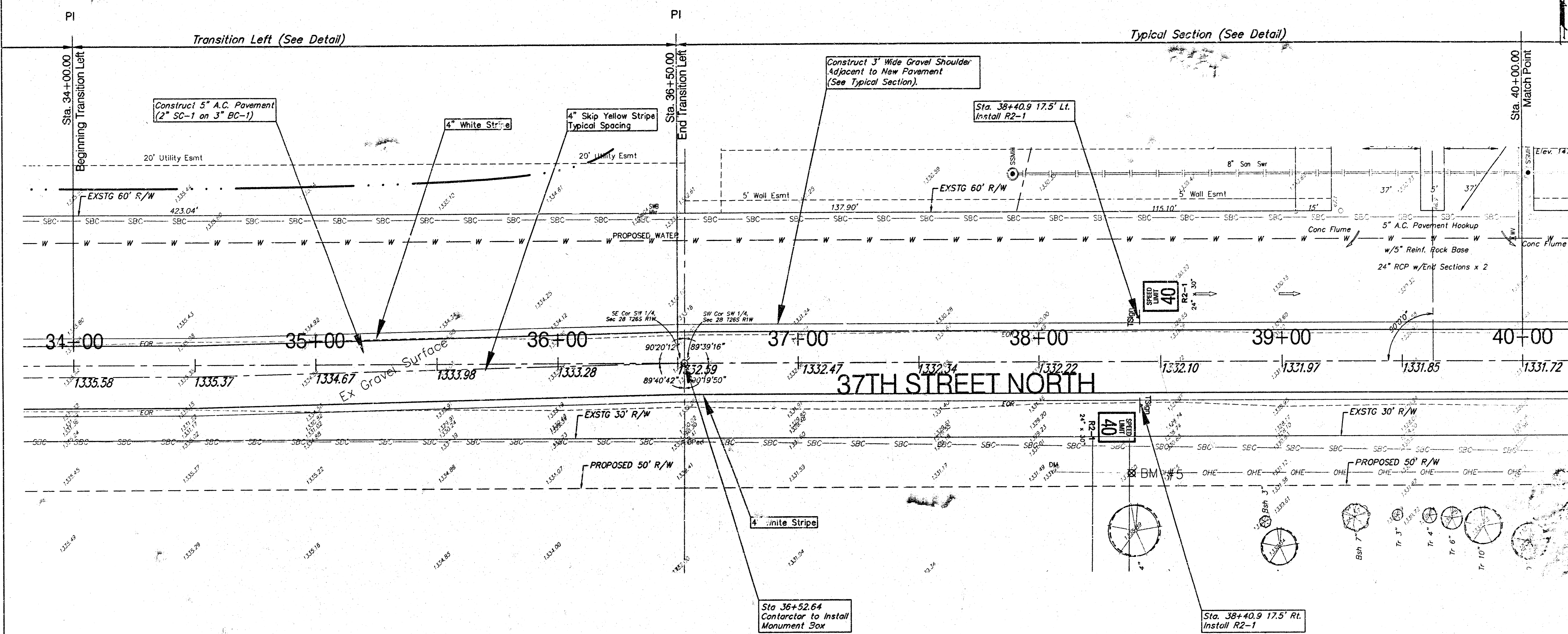
PROJECT NUMBER 472-83948	SHEET NAME PAV 04	ENGINEERING DIRECTORY Engr 37th St Ridge to Tyler
DESIGN KK	DRAWN TCA	APPROVED JFB
DATE June 04	SCALE 1" = 20'	BAUGHMAN NO 04-06-E907

PAVEMENT IMPROVEMENT
37th ST. TYLER TO RIDGE

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SHEET
OF
5
12

0 10 20
SCALE: 1" = 20'



BENCHMARKS:
 BM #5
 Railroad spike north face of power pole on south side of 37th Street at Sta. 38+38±
 Elevation = 1331.55 MSL Datum

BM #0
 Fence T-post driven 4" deep approximately 28 feet right at Sta. 32+00±
 Elevation = 1335.89 MSL Datum

GENERAL NOTES - MARKING

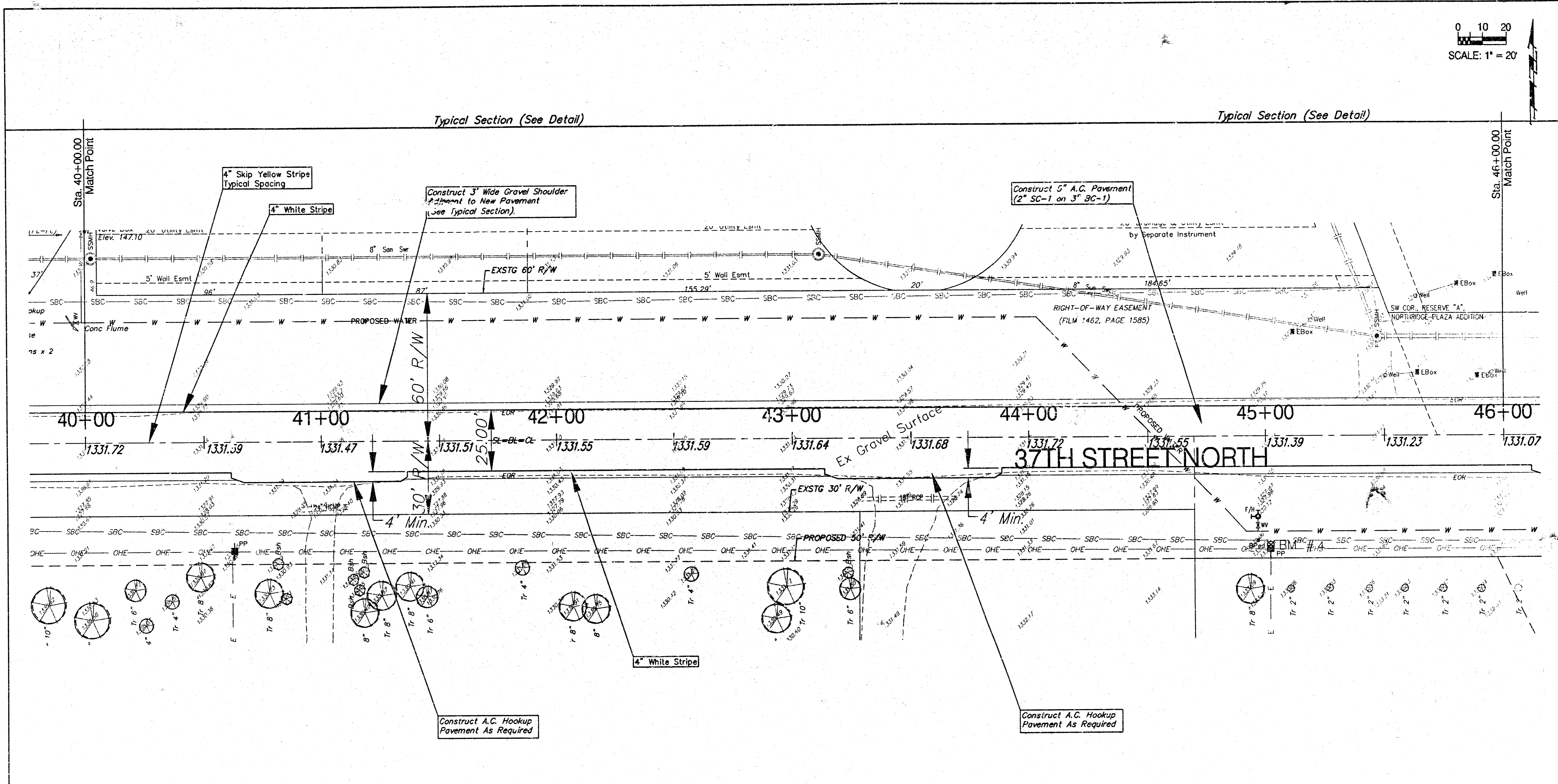
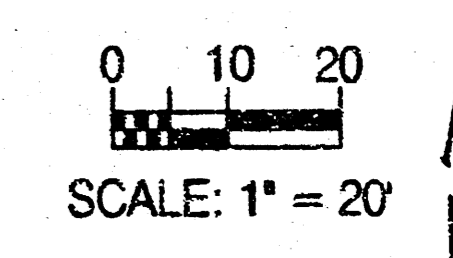
- All pavement markings shall conform to the current standards set forth in the latest publication of the "Manual on Uniform Traffic Control Devices".
- All pavement markings shall be the "Cold-laid Plastic Tape" type or Thermoplastic type, (white and yellow), meeting the required specifications of the Engineering Division, City of Wichita, Kansas.
- Installation of marking tapes on other than new asphaltic concrete pavement (i.e. concrete pavements; existing A.C. surfaces, etc.) shall be accomplished in accordance with installation specifications for cold-laid markings.
- Where new asphaltic concrete pavement is being constructed, the new pavement markings shall be installed while the new wearing surface is still warm (at least 130F) and rolled, so as to imbed the pavement markings into the new pavement surface.

PROJECT NUMBER 472-83948	SHEET NAME PAV 05	ENGINEERING DIRECTORY P. Eng 37th St. Ridge to Tyler
DESIGN KK	DRAWN TCA	APPROVED JFB
DATE June 04	SCALE 1" = 20'	BAUKHMAN NO 04-05-E907

PAVEMENT IMPROVEMENT
 37th ST. TYLER TO RIDGE

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SHEET
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OF
12



BENCHMARKS:
 BM #3
 "I" steel fence corner post footing on the south side of 37th Street at Sta. 49+95±
 Elevation = 1329.25 MSL Datum

BM #4
 Railroad spike north face of power pole (with transformer) on south side of 37th
 Street at Sta. 45+00±
 Elevation = 1332.80 MSL Datum

- GENERAL NOTES - MARKING**
- All pavement markings shall conform to the current standards set forth in the latest publication of the "Manual on Uniform Traffic Control Devices".
 - All pavement markings shall be the "Cold-laid Plastic Tape" type or "Thermoplastic" type, (white and yellow), meeting the required specifications of the Engineering Division, City of Wichita, Kansas.
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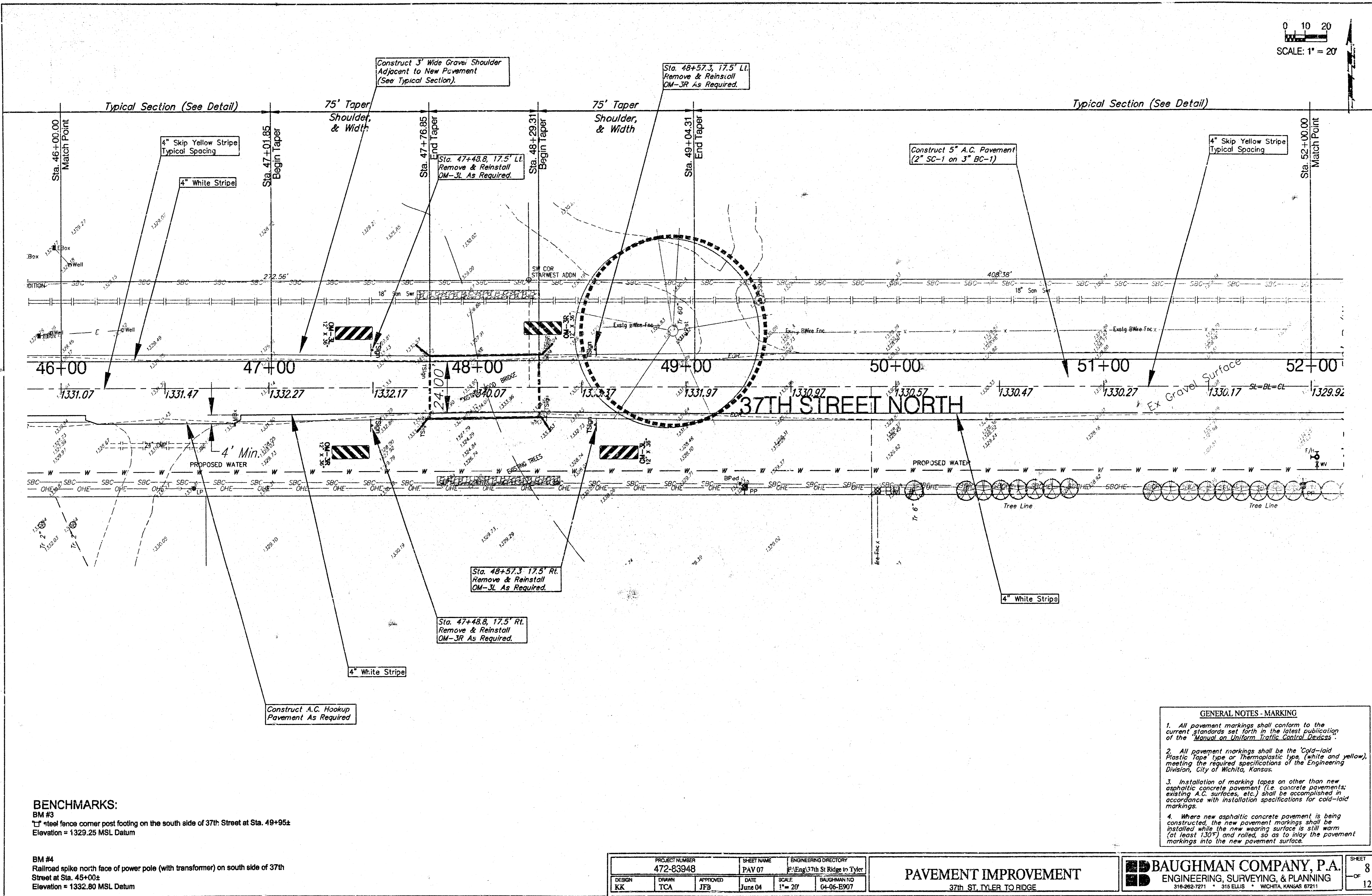
PROJECT NUMBER 472-83948	SHEET NAME PAV 06	ENGINEERING DIRECTORY Enl Eng 37th St Ridge to Tyler
DESIGN KK	DRAWN TCA	APPROVED JFB
DATE June 04	SCALE 1" = 20'	BAUHMANN 04-06-E907

PAVEMENT IMPROVEMENT
 37th ST. TYLER TO RIDGE

BAUHMANN COMPANY, P.A.
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SHEET
7
OF
12

0 10 20
SCALE: 1" = 20'



BENCHMARKS:
 BM #3
 steel fence corner post footing on the south side of 37th Street at Sta. 49+95±
 Elevation = 1329.25 MSL Datum
 BM #4
 Railroad spike north face of power pole (with transformer) on south side of 37th Street at Sta. 45+00±
 Elevation = 1332.80 MSL Datum

GENERAL NOTES - MARKING

- All pavement markings shall conform to the current standards set forth in the latest publication of the "Manual on Uniform Traffic Control Devices".
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PROJECT NUMBER 472-83948	SHEET NAME PAV 07	ENGINEERING DIRECTORY P. Eng. Tyler St. Ridge in Tyler
DESIGN KK	DRAWN TCA	APPROVED JFB
DATE June 04	SCALE 1" = 20'	BAUGHMAN NO 04-06-E907

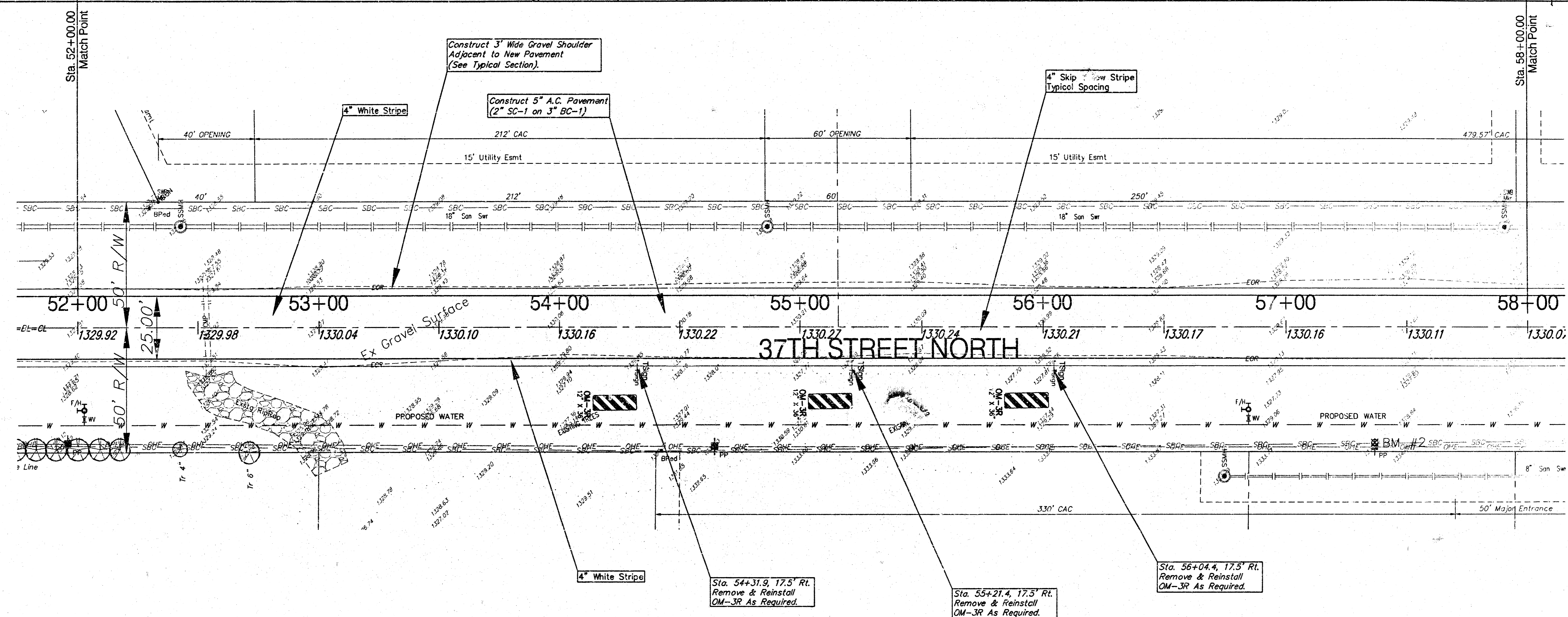
PAVEMENT IMPROVEMENT
 37th ST, TYLER TO RIDGE

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SHEET
8
OF
12

0 10 20
SCALE: 1" = 20'

Typical Section (See Detail)



BENCHMARKS:

BM #1
Sedgwick County Benchmark (□) on the south hubguard of the RCBC on 37th Street. 73'± west of the center line of Ridge Road
Elevation = 1331.52 MSL Datum

BM #2
Railroad spike on the north face of power pole on south side of 37th Street at Sta. 57+35±
Elevation = 1331.10 MSL Datum

GENERAL NOTES - MARKING

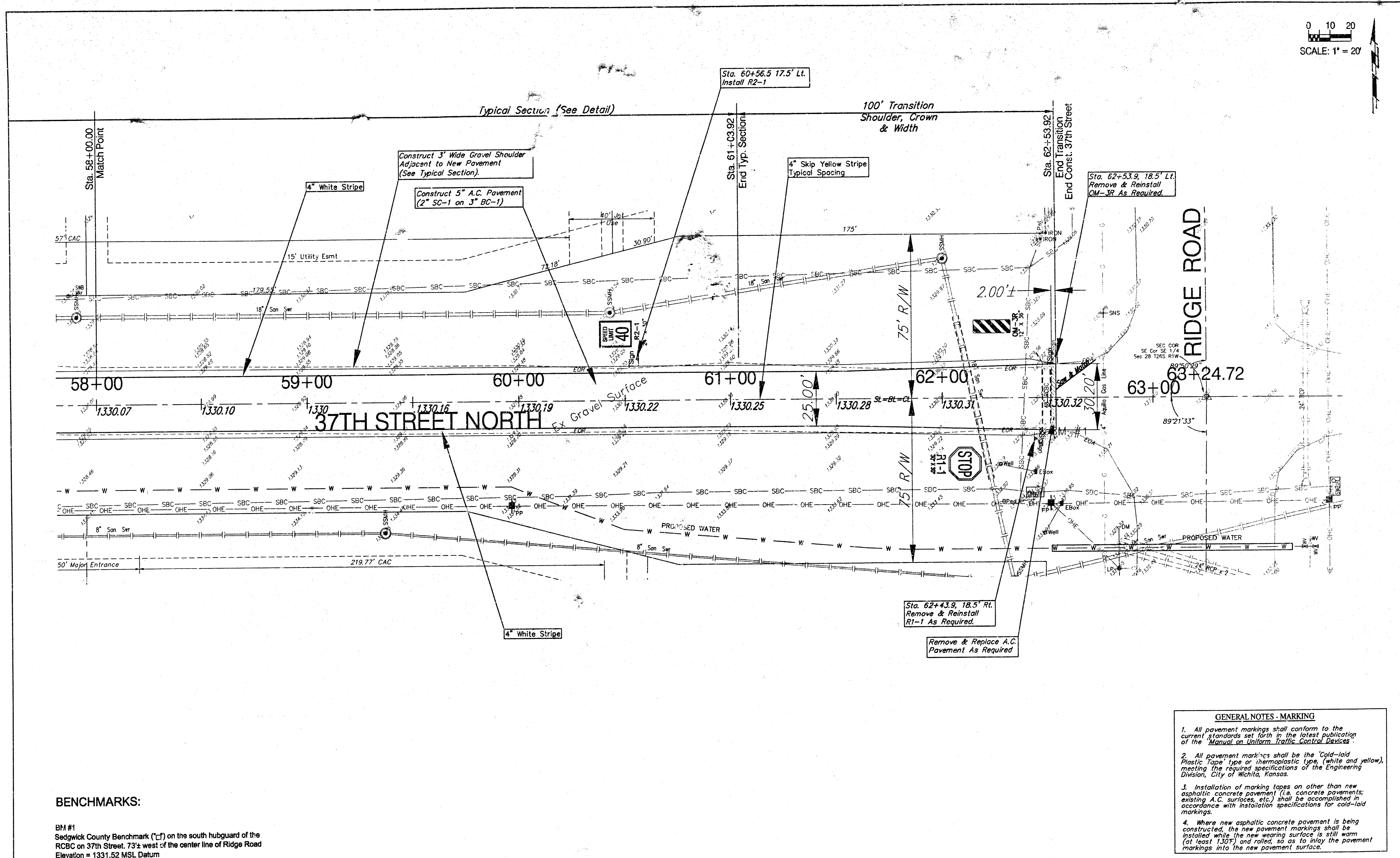
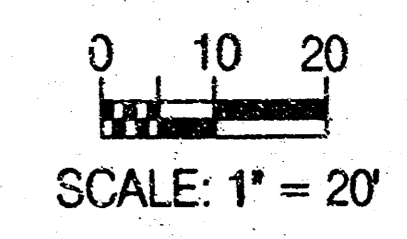
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- Installation of marking tapes on other than new asphaltic concrete pavement (i.e. concrete pavements, existing A.C. surfaces, etc.) shall be accomplished in accordance with installation specifications for cold-laid markings.
- Where new asphaltic concrete pavement is being constructed, the new pavement markings shall be installed while the new wearing surface is still warm (at least 130°F) and rolled, so as to embed the pavement markings into the new pavement surface.

PROJECT NUMBER 472-83948		SHEET NAME PAV 08		ENGINEERING DIRECTORY P: Eng (37th St Ridge to Tyler)	
DESIGN KK	DRAWN TCA	APPROVED JFB	DATE June 04	SCALE 1" = 20'	BAURMAN NO 04-06-E907

PAVEMENT IMPROVEMENT
37th ST, TYLER TO RIDGE

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SHEET
9
OF
12



BENCHMARKS:

BM #1
Sedgwick County Benchmark (T) on the south hubguard of the RCBC on 37th Street, 73± west of the center line of Ridge Road
Elevation = 1331.52 MSL Datum

BM #2
Railroad spike on the north face of power pole on south side of 37th Street at Sta. 57+35±
Elevation = 1331.10 MSL Datum

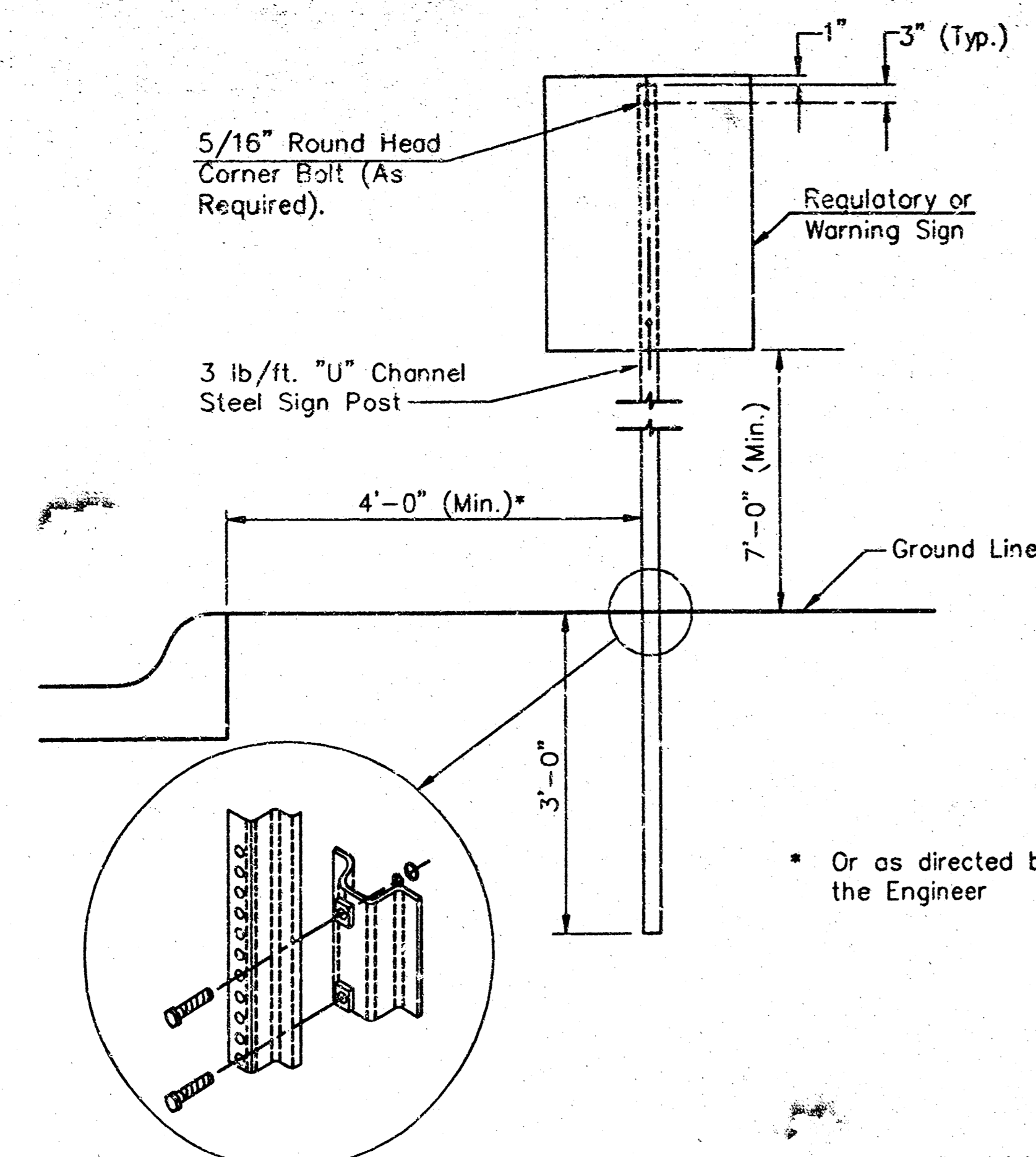
- GENERAL NOTES - MARKING**
- All pavement markings shall conform to the current standards set forth in the latest publication of the *Manual on Uniform Traffic Control Devices*.
 - All pavement markings shall be the 'Cold-laid Plastic Tape' type or thermoplastic type, (white and yellow), meeting the required specifications of the Engineering Division, City of Wichita, Kansas.
 - Installation of marking tapes on other than new asphaltic concrete pavement (i.e. concrete pavements; existing A.C. surfaces, etc.) shall be accomplished in accordance with installation specifications for cold-laid markings.
 - Where new asphaltic concrete pavement is being constructed, the new pavement markings shall be installed while the new wearing surface is still warm (at least 130°F) and rolled, so as to infuse the pavement markings into the new pavement surface.

PROJECT NUMBER 472-83948	SHEET NAME PAV 09	ENGINEERING DIRECTORY P:\Eng\37th St Ridge to Tyler
DESIGN KK	DRAWN TCA	APPROVED JFB
DATE June 04	SCALE 1" = 20'	BAUGHMAN NO 04-06-1907

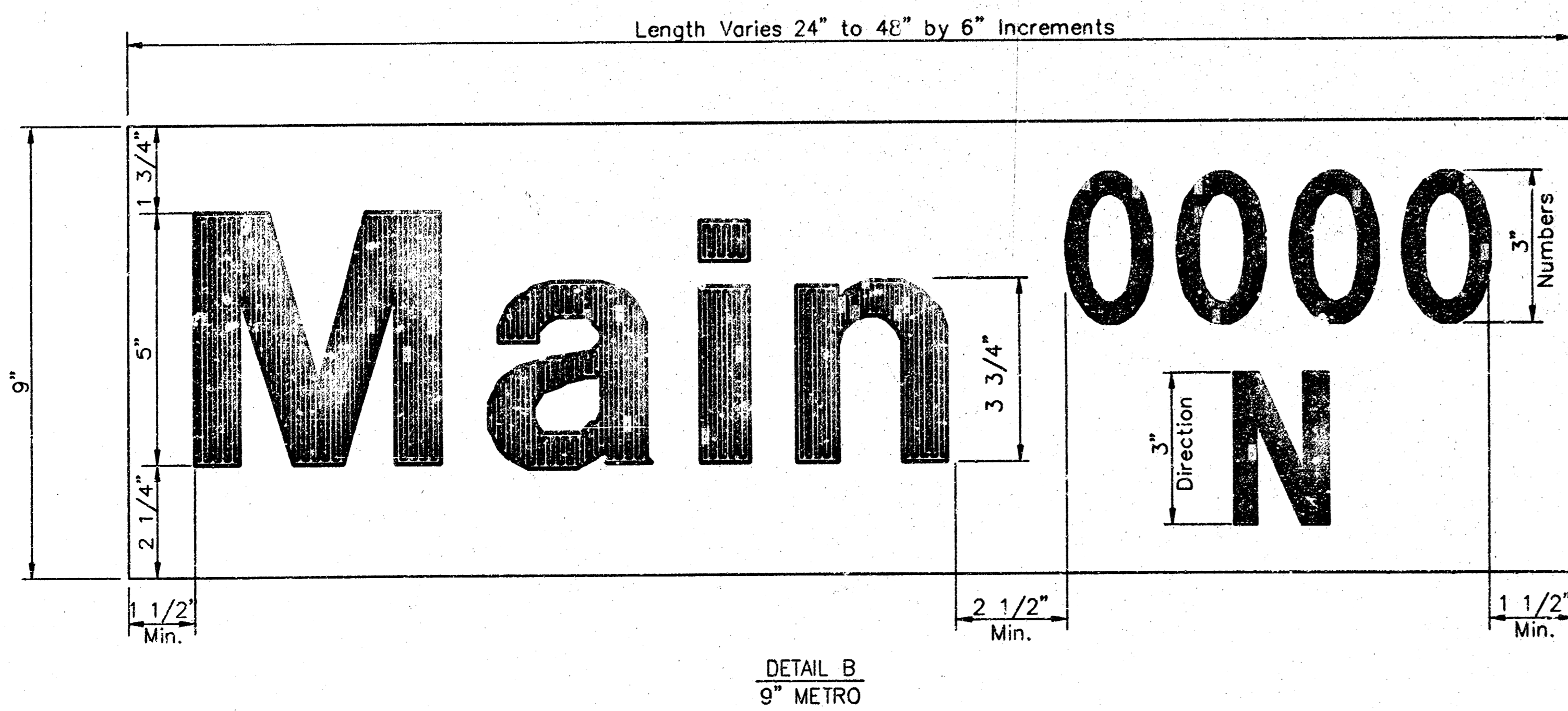
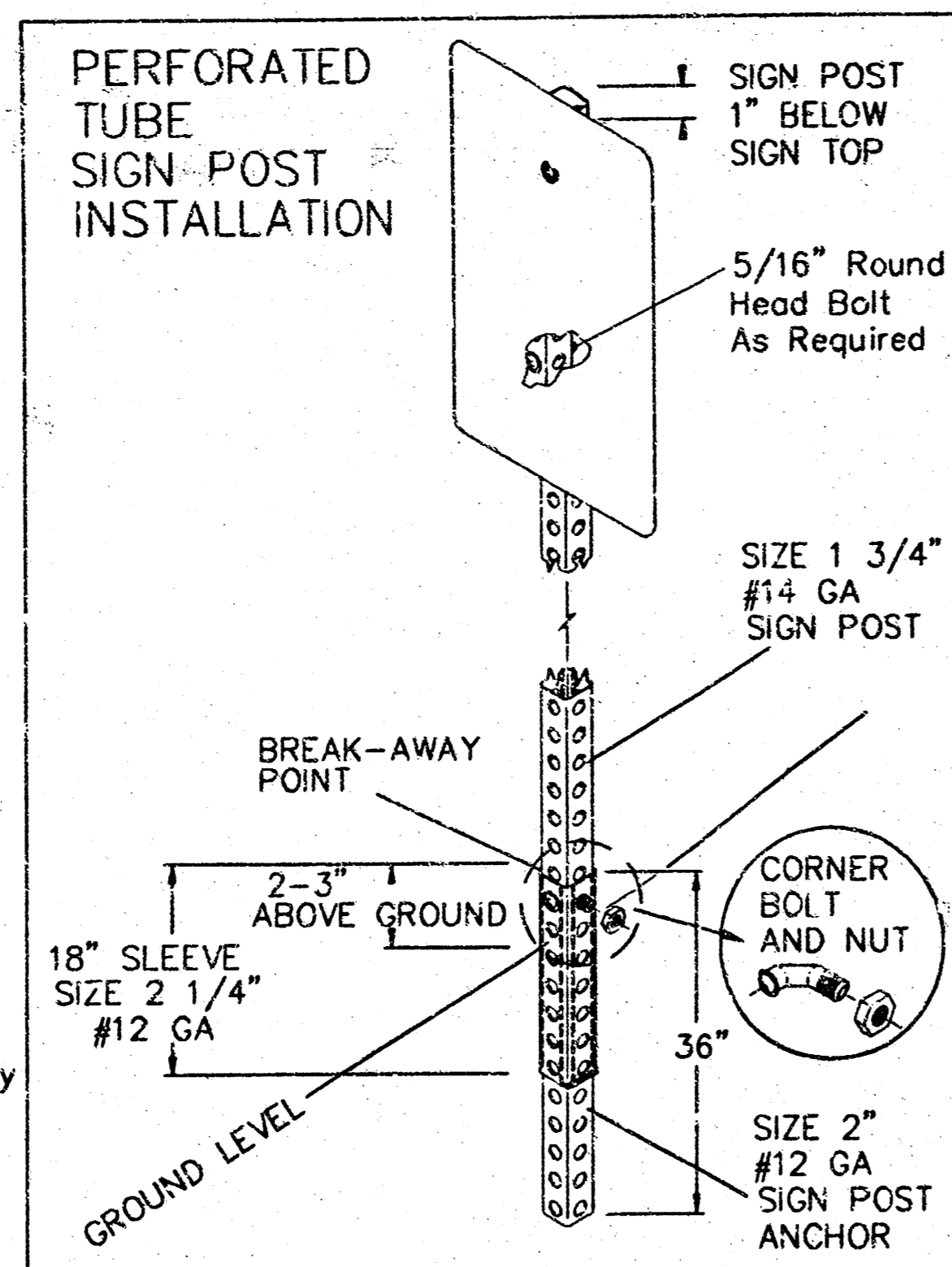
PAVEMENT IMPROVEMENT
37th ST, TYLER TO RIDGE

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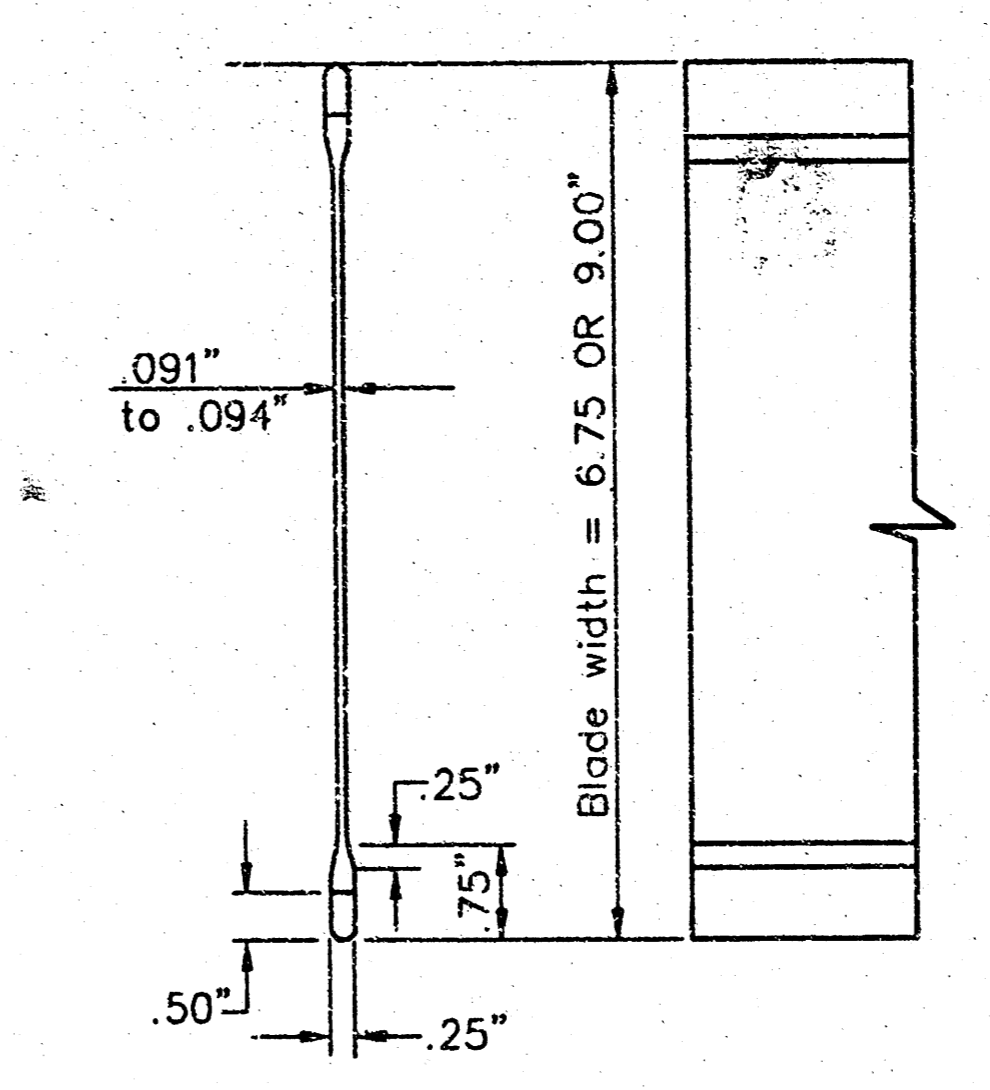
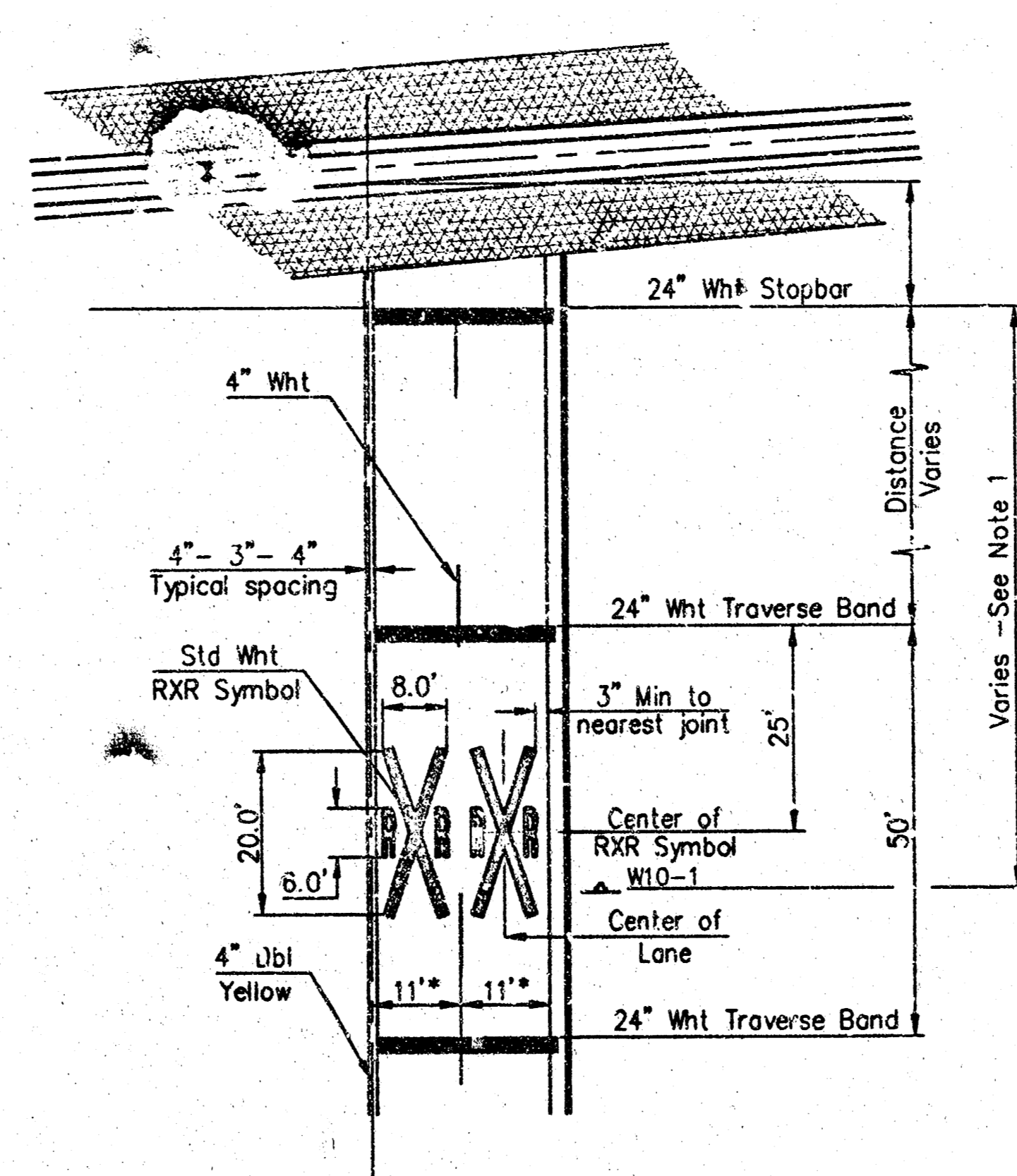
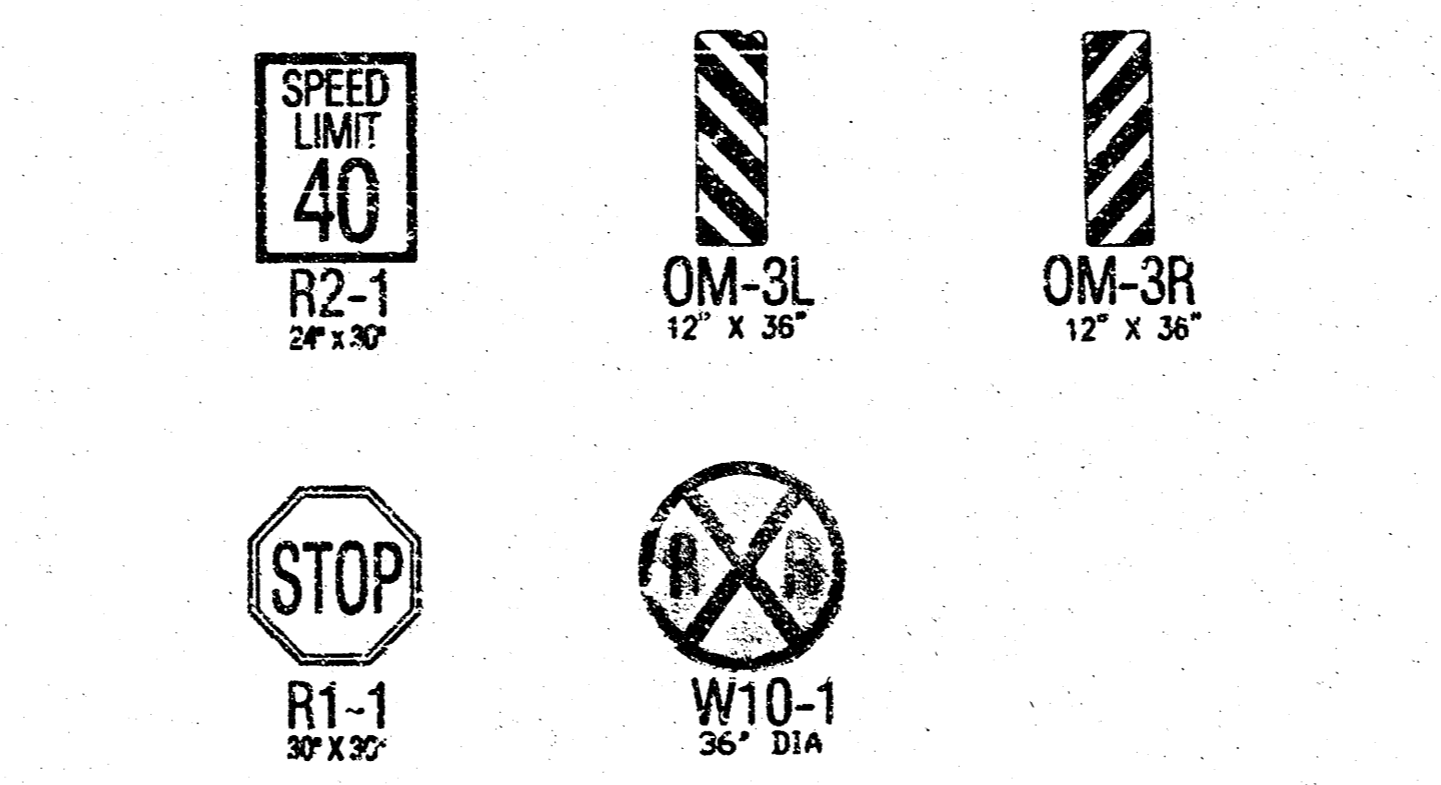
SHEET
10
OF
12



TYPICAL TRAFFIC CONTROL SIGN MOUNTING INSTALLATION
CURB AND GUTTER SECTION



DETAIL B
9" METRO



STREET NAME SIGN
BLADE DETAILS

15.0± to near track
(8± if Crossing Gate is present)

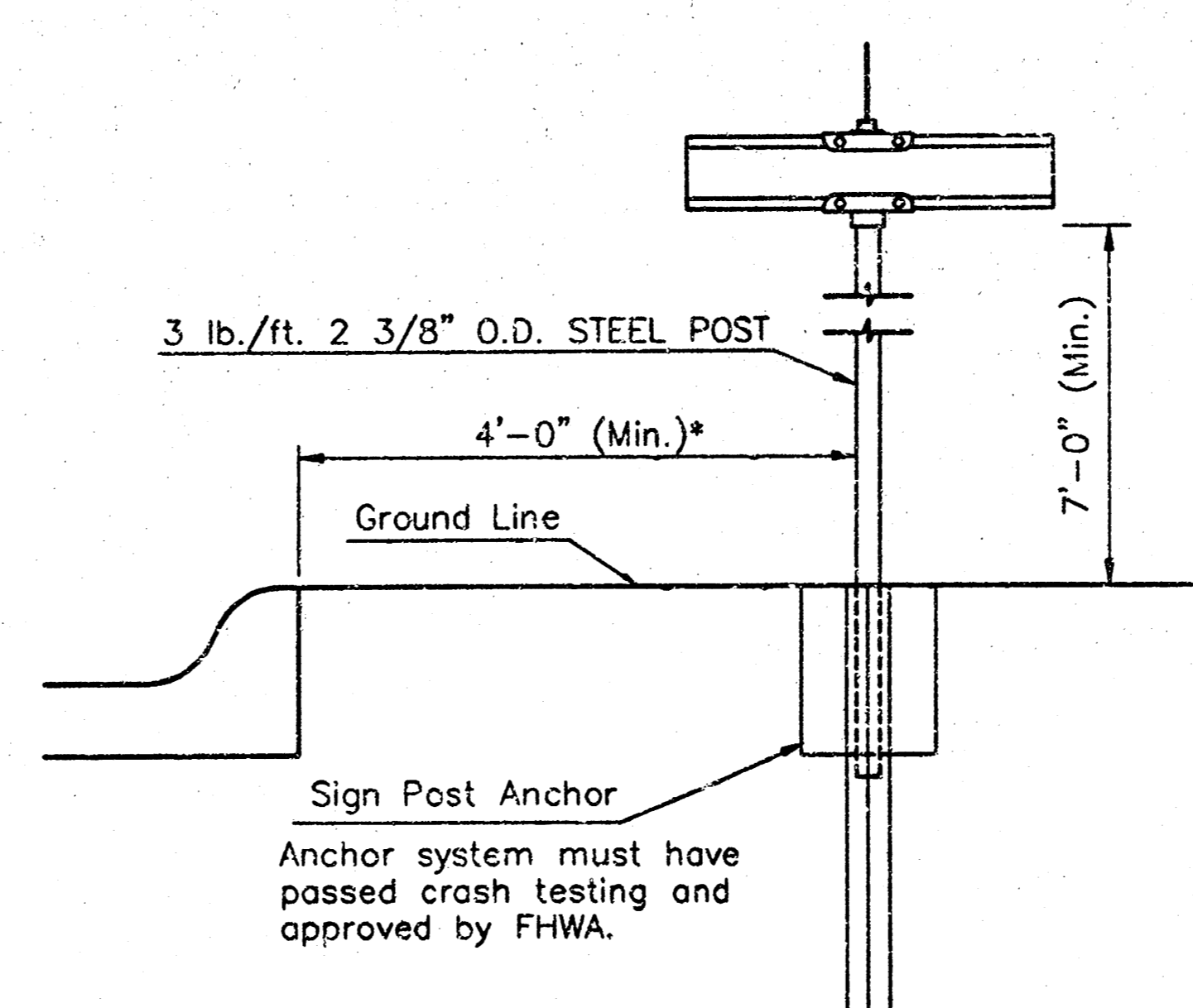
- When used, a portion of the pavement marking symbol should be directly opposite the Advance Warning Sign (W10-1). If needed, supplemental pavement marking symbol(s) may be placed between the Advance Warning Sign and the crossing, but should be at least 50 feet from the Stop Line.
- A three lane roadway should be marked with a centerline for two-lane approach operation on the approach to a crossing.
- On multi-lane roads the traverse bands should extend across all approach lanes, and individual RXR symbols should be used in each approach lane.
- Refer to Standard Alphabet for Highway Signs and Markings for RXR symbols details.

SIGN ASSEMBLY TABLE

STATION	OFFSET	SIGN	QUANTITY*
10+30.2	38.8' Rt.	SNS	2
13+16.9	17.5' Lt.	R2-1	1
22+60.0	17.5' Rt.	W10-1	1
28+81.6	17.5' Lt.	W10-1	1
38+40.9	17.5' Lt.	R2-1	1
38+40.9	17.5' Rt.	R2-1	1
47+48.8	17.5' Lt.	OM-3L	**
47+48.8	17.5' Rt.	OM-3R	**
48+57.3	17.5' Lt.	OM-3L	**
48+57.3	17.5' Rt.	OM-3R	**
54+31.9	17.5' Lt.	OM-3R	**
55+21.4	17.5' Rt.	OM-3R	**
56+04.4	17.5' Lt.	OM-3R	**
60+56.5	17.5' Lt.	R2-1	1
62+43.9	18.5' Rt.	R1-1	1
62+53.9	18.5' Lt.	OM-3R	**
TOTAL			9

** Remove & Reinstall As Required.
* For Information Only

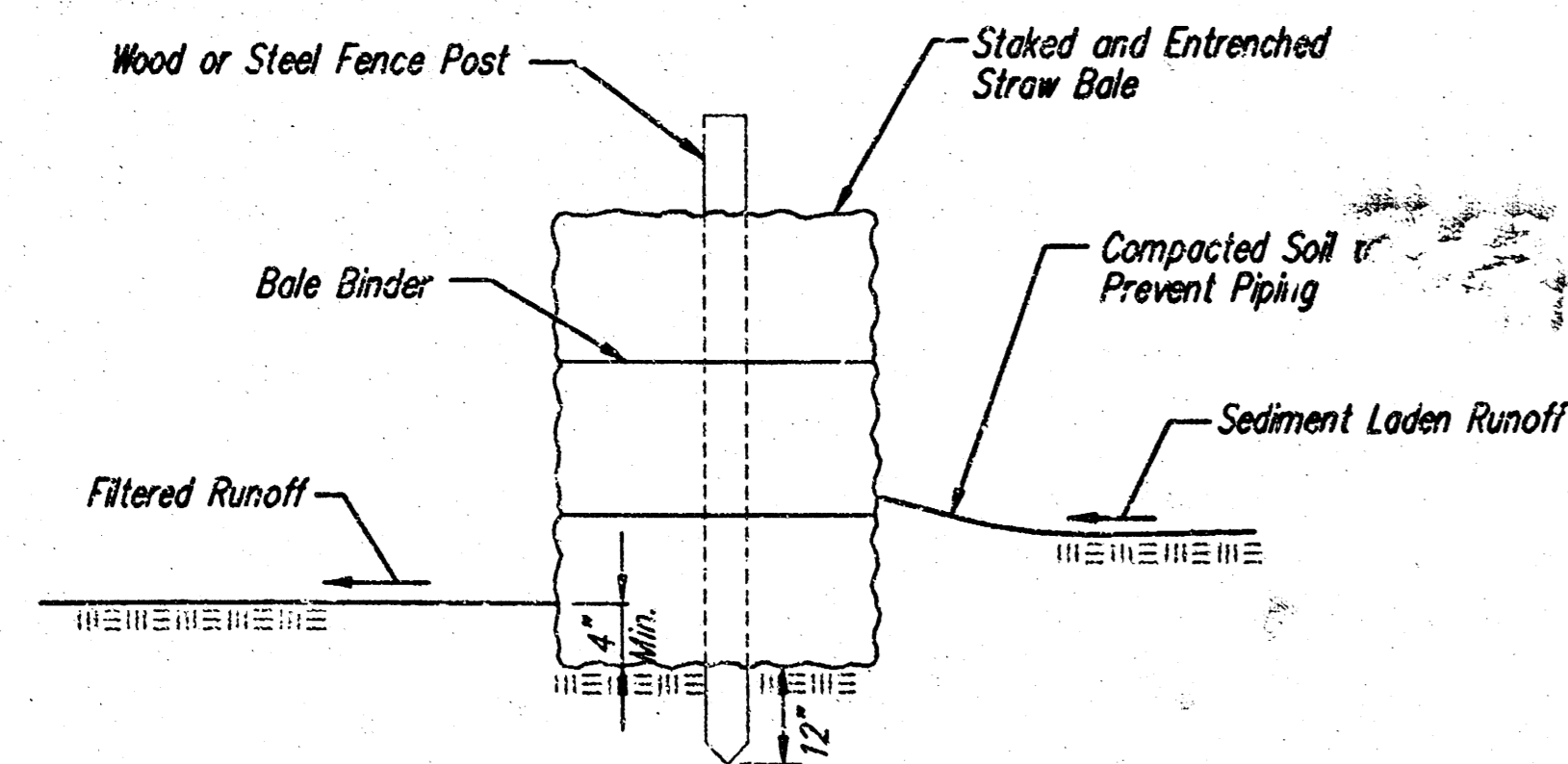
STREET NAME	NO. BLADES REQ'D	
	6 3/4" STD	9" METRO
Tyler Road (3700 N)	1	
37th St (8700 W)		1



TYPICAL STREET NAME SIGN MOUNTING INSTALLATION
CURB AND GUTTER SECTION

NOTE: REFERENCES BELOW TO "STANDARD SPECIFICATIONS" DENOTE "STANDARD SPECIFICATION FOR STATE ROAD AND BRIDGE CONSTRUCTION EDITION 1990" BY THE KANSAS DEPARTMENT OF TRANSPORTATION.

- POST ANCHORS: POSTS SHALL BE ANCHORED WITH A YIELDING BASE POST SUPPORT AS DETAILED.
- POSTS FOR TRAFFIC CONTROL SIGNS: POSTS SHALL CONFORM TO THE REQUIREMENTS OF SUBSECTION 1620 OF THE STANDARD SPECIFICATIONS EXCEPT THAT ALL POSTS SHALL WEIGH 3 LBS./FOOT MINIMUM.
- POSTS FOR STREET NAME SIGNS (SNS): POSTS SHALL BE 9 FEET LONG, CONSTRUCTED FROM 2 3/8" O.D. GALVANIZED STEEL PIPE WEIGHING A MINIMUM OF 3 LBS./FOOT. POSTS SHALL BE POSITIONED SO THAT THE BOTTOM BLADE IS 7 FEET ABOVE GRADE.
- POSTS FOR END OF ROADWAY SIGN TO BE 8' LONG AND INSTALLED A MINIMUM OF 4' FROM ROADWAY TO FACE OF SIGN.
- SIGN BLANKS FOR TRAFFIC CONTROL SIGNS: SIGN BLANKS SHALL BE FABRICATED FROM 0.080" ALUMINUM ALLOY 6063-T6 CONFORMING TO THE REQUIREMENTS OF SUBSECTION 1626 OF THE STANDARD SPECIFICATIONS.
- SIGN BLADES FOR STREET NAME SIGNS: EXTRUDED ALUMINUM BLADES SHALL BE ALUMINUM ALLOY CONFORMING TO 6063-T6 OR 5052-H38 (ASTM SPECIFICATION 8221, LATEST ISSUE). BLADES SHALL HAVE AN ALODINE OR PHOSPHATE ETCHED FINISH. BLADES SHALL HAVE SQUARE CORNERS AND NO HOLES.
MINIMUM BLADE LENGTH SHALL BE 24". MAXIMUM BLADE LENGTH SHALL BE 48". LENGTH VARIES BY INCREMENTS OF 6".
BLADES BEARING THE STREET NAMES SHALL BE FIRMLY ATTACHED TO THE MOUNTING BRACKETS USING ALLEN-TYPE SET SCREWS. THE BLADES SHALL BE ORIENTED PARALLEL TO THE STREET.
- MOUNTING BRACKETS FOR SIGNS: DIE-CAST ALUMINUM BRACKETS SHALL BE ALUMINUM ALLOY 360 HAVING A TENSILE STRENGTH OF 44,000 PSI. THE BRACKETS SHALL BE SMOOTHLY FINISHED FREE OF PITS, BURRS, AND FLAWS. EACH BRACKET SHALL BE TAPPED AND DRILLED FOR 5/16" ZINC-PLATED ALLEN-TYPE SET SCREWS HAVING SELF-LOCKING SAW-TOOTH ENDS.
- FASTENERS: ALL STEEL FASTENERS FOR TRAFFIC CONTROL SIGNS SHALL BE GALVANIZED AND SHALL CONFORM TO THE REQUIREMENTS OF SUBSECTION 1614 OF THE STANDARD SPECIFICATIONS.
- REFLECTIVE SHEETING: REFLECTIVE SHEETING SHALL BE TYPE II - HIGH PERFORMANCE CLASS HA IN ACCORDANCE WITH SUBSECTION 2201 OF THE STANDARD SPECIFICATIONS.
- PROCESS INK: ALL PROCESS INK SHALL CONFORM TO THE REQUIREMENTS OF SUBSECTION 2202 OF THE STANDARD SPECIFICATIONS.
- DETAILS: REGULATORY AND WARNING SIGNS SHALL CONFORM TO THE DETAILS IN "STANDARD HIGHWAY SIGNS", FHWA, 1979.
- DETAILS - SNS: THE REFLECTIVE SHEETING FOR THE 6 3/4" STANDARD SIZE SNS IS TO BE THE HIGHWAY GREEN BACKGROUND WITH SILVERWHITE #2 COPY WITH 4" UPPER CASE AND LOWER CASE PRIMARY COPY AND SUFFIX COPY. BOTH SERIES "C". THE CARDINAL DIRECTION CENTERED DIRECTLY BELOW THE BLOCK NUMBER SHALL BE AN UPPER CASE, 3" SERIES "C" LETTER. FACES TO TRIM TO A 6 1/4". (SEE DETAIL A.)
THE REFLECTIVE SHEETING FOR THE 9" METRO SIZE SNS IS TO BE THE HIGHWAY GREEN BACKGROUND WITH SILVERWHITE #2 COPY WITH 5" UPPER CASE AND LOWER CASE PRIMARY COPY AND SUFFIX COPY. BOTH SERIES "C". THE CARDINAL DIRECTION CENTERED DIRECTLY BELOW THE BLOCK NUMBER SHALL BE AN UPPER CASE, 3" SERIES "C" LETTER. FACES TO TRIM TO A 8 1/2" WIDTH. (SEE DETAIL B.)
- FOR CUL-DE-SAC STREETS, A 9" METRO SIZE BLADE SHALL BE USED WITH THE HOUSE NUMBERS DISPLAYED BENEATH THE STREET NAME. LETTERING TO BE THE SAME AS FOR THE 6 3/4" SIZE BLADE, EXCEPT THAT THE HOUSE NUMBER INFORMATION SHALL BE 4" SERIES "C".
SHOP DRAWINGS OF LAYOUT FOR SNS SHALL BE SUBMITTED TO THE TRAFFIC ENGINEERING DIVISION OF THE CITY OF WICHITA FOR APPROVAL PRIOR TO FABRICATION. THE FINISHED SIGNS AS SUPPLIED SHALL BE OF GOOD APPEARANCE, FREE FROM RAGGED EDGES, CRACKS, SCALES OR BLISTERS AND SHALL BE CLEAN-CUT. SIGNS SHALL BE PACKED IN SUCH MANNER AS TO PREVENT DAMAGE OR DEFACTION DURING SHIPMENT OR STORAGE.
- PERMANENT TRAFFIC CONTROL AND SNS: PERMANENT TRAFFIC CONTROL AND SNS SHALL BE MEASURED AND PAID FOR AT THE LUMP SUM PRICE FOR SIGNING. THE PAYMENT AS SET FORTH ABOVE SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EXCAVATION, BACKFILLING, POSTS, ANCHORS, FASTENERS, MATERIALS, LABOR, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK.



STRAW BALE BARRIERS

Material Specification:

Bale slope barriers 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.

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 setting out sediment. When practicable, bale slope barriers should be placed along contours to avoid a concentration of flow. Bale 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 4" deep and a bale's width 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. 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 upslope side of the check and compact it. The compacted soil should be no more than 3" to 4" deep.

List of common placement/installation mistakes to avoid:

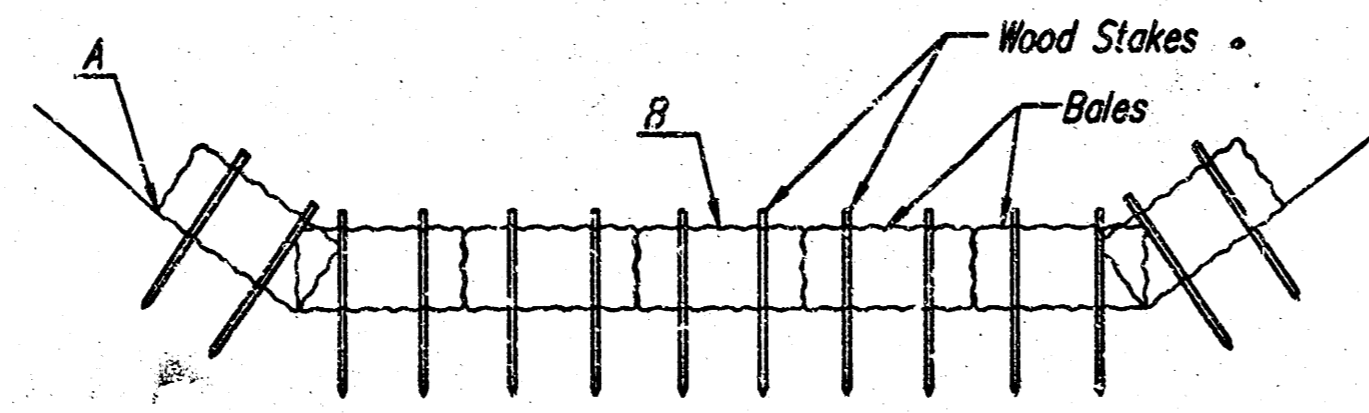
When practicable, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downstream side of the barrier. The scour hole eventually undermines the bales and the barrier fails. Do not place bale slope barriers in areas with shallow soils underlain by rock. If the barrier is not anchored sufficiently, it will wash out. Bale slope 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 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?
- 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 slope barrier?

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. 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 at 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 in the ground with 8" landscape staples placed around the perimeter of the blanket. 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".

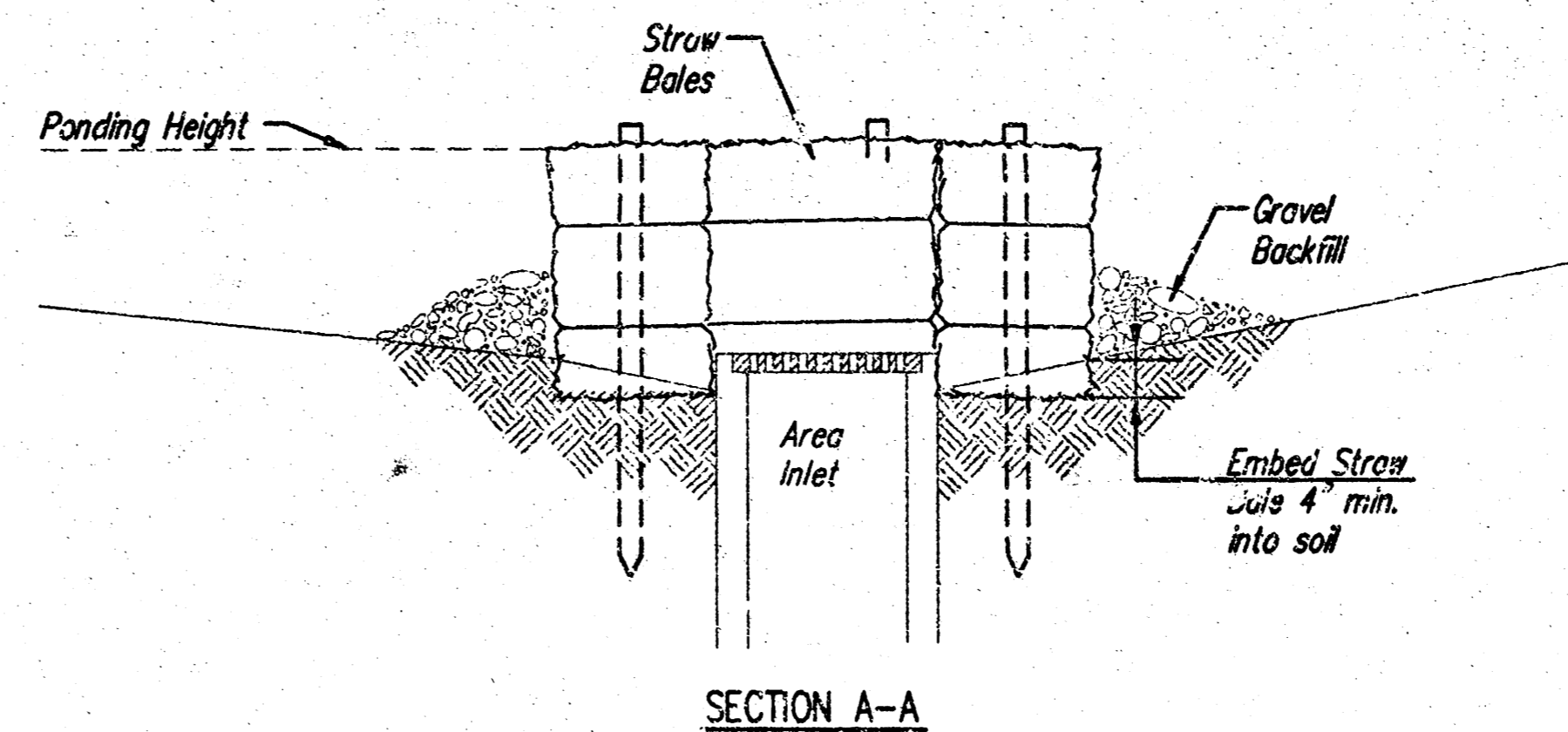
List of common placement/installation mistakes to avoid:

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.

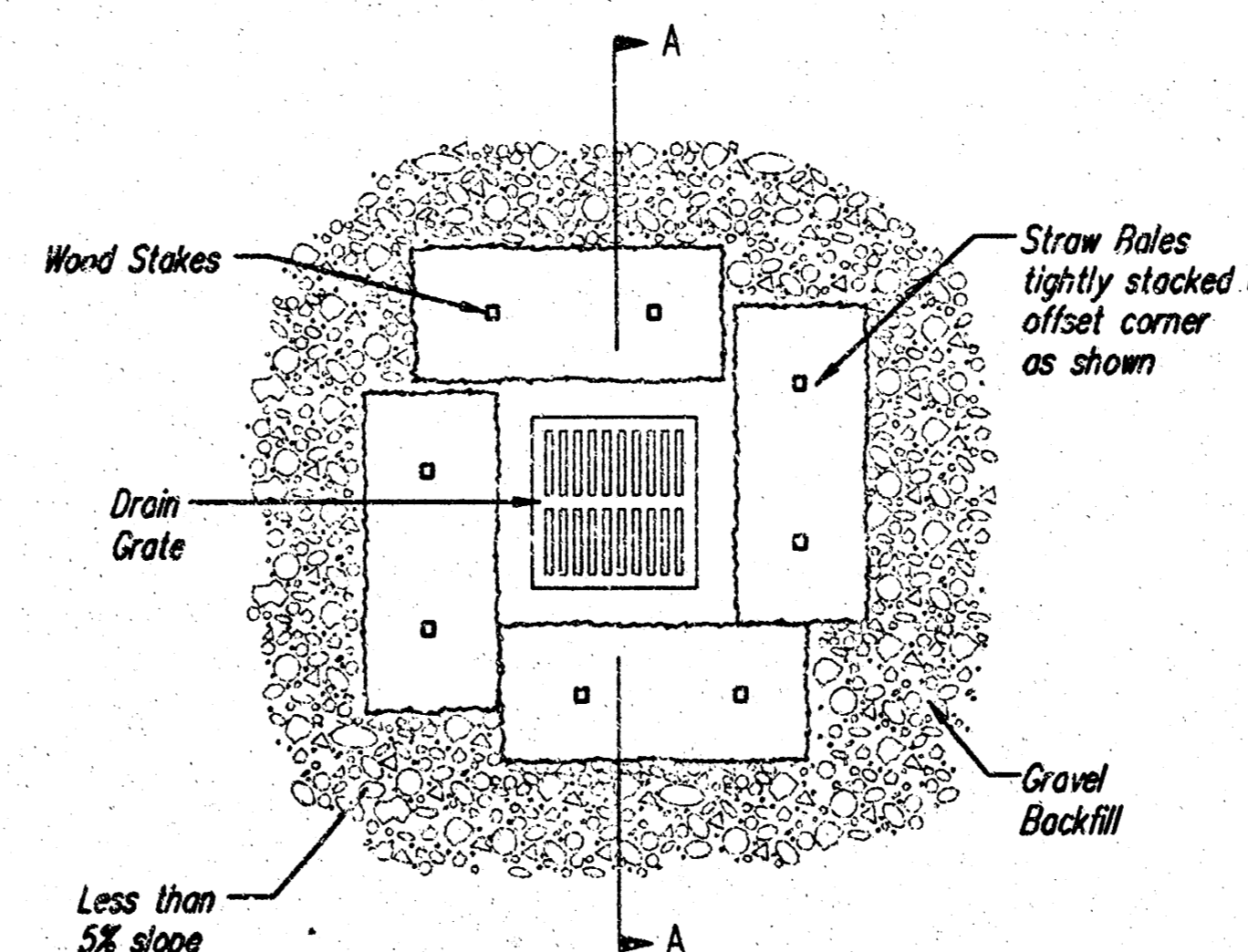
Inspection and Maintenance:

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?



SECTION A-A



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.

Placement:

Bale area inlet barriers should be placed directly against 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.

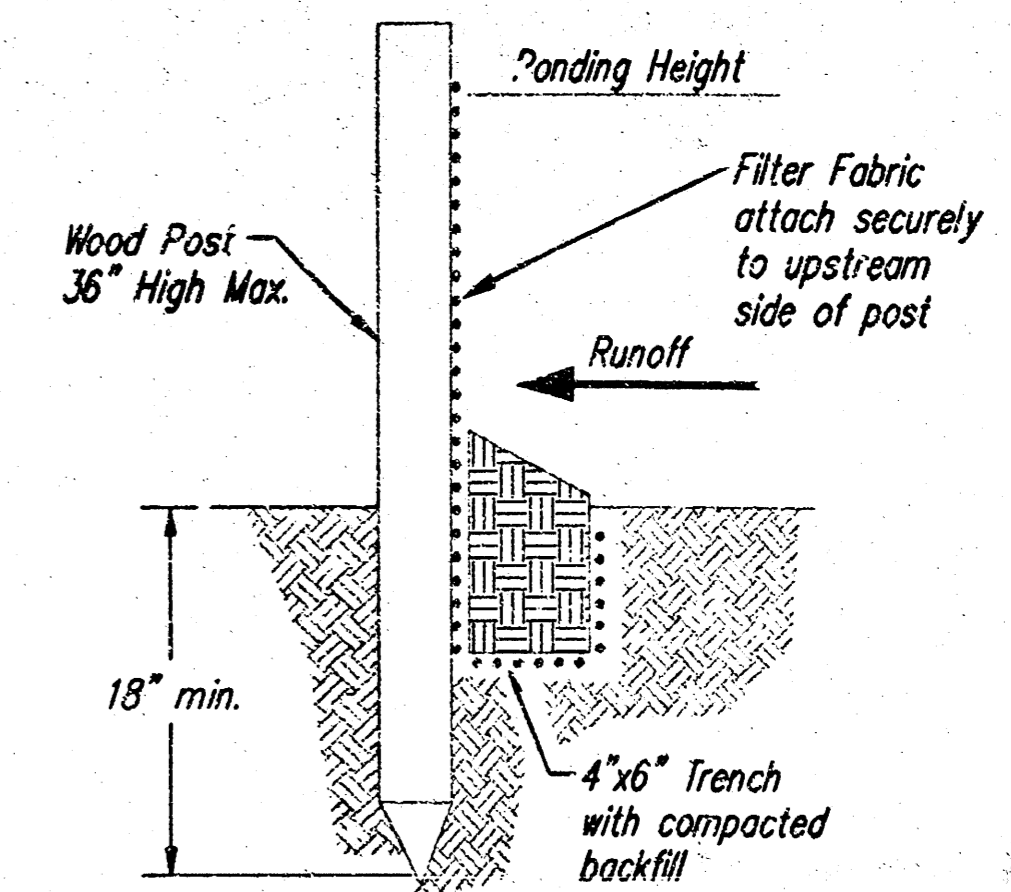
List of common placement/installation mistakes to avoid:

Bales should be placed directly against the perimeter of the area inlet. This allows overlapping 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

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 setting 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?



CITY OF WICHITA

SOIL EROSION BMP DETAILS

CHRISTOPHER W. CARRIER, P.E.
STORM WATER ENGINEER

PROJECT NUMBER: 472-83948 OCA NO.: 765851

DATE: JUNE 2004 SHEET 12 OF 12