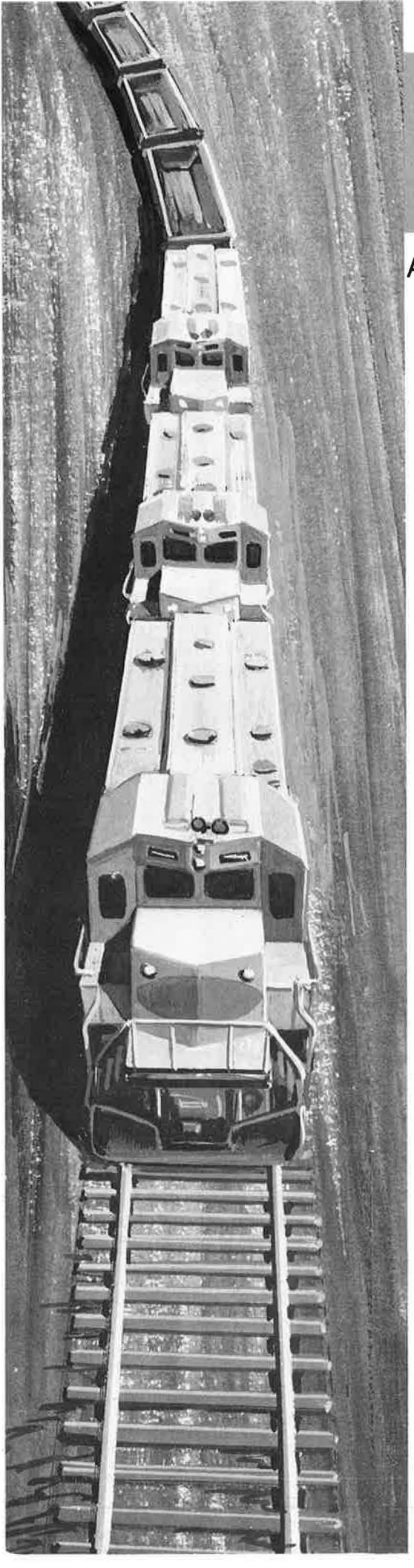

THE
FAST
TRACK
TRANSPORTATION
TEST CENTER
Pueblo, Colorado
DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA
2nd Edition
Facility for
Accelerated Service Testing



FAST:

A FACILITY FOR ACCELERATED SERVICE TESTING

The Facility for Accelerated Service Testing (FAST) was created to answer the need for a full systems approach to track structure and rail vehicle research. It is located at the Transportation Test Center of the U.S. Department of Transportation near Pueblo, Colorado.

The first of its kind in the United States, FAST is used to simultaneously test various track structures, rail, ties, ballast, fasteners, switches and switch components, track stability, safety equipment, vehicle components, lading techniques, maintenance methods and equipment under heavy demand conditions.

The concept of FAST was developed under a program jointly funded by the Federal Railroad Administration and the Association of American Railroads. In its present configuration, FAST is the product of extensive planning under the Track Train Dynamics Program, an international government-industry research program sponsored by the Association of American Railroads, Canadian Transportation Development Agency, Federal Railroad Administration, and the Railway Progress Institute. FAST was constructed using railroad track components and ballast largely supplied by the railroad industry, which is also supplying the locomotives, cars and components. The Federal Railroad Administration funded the construction and is funding the operation of the facility.

Prior to the establishment of FAST, track and equipment components were subjected to laboratory and full-scale tests in revenue service before acceptance for general railroad use. The length of time required for enough full-scale testing to warrant a change in components was often excessive compared to the desired rate of technological progress. FAST is intended to shorten the time necessary to complete full-scale testing. A heavy train running up to 16 hours a day at or near the maximum speed permitted by the track design applies full-service loads on track and equipment up to ten times the normal exposure in revenue service. With FAST, therefore, information on the performance of structures and components can be gathered up to ten times more rapidly than before.

Information in this brochure represents the FAST Project configuration as of September 1977—the first anniversary of FAST operations. It has been updated and expanded from the original issue of the U.S. Department of Transportation/Federal Administration FAST brochure.

FAST operations

Four road locomotives are customarily used to pull a consist of more than 75 100-ton loaded hoppers, tank cars of varying loads and 3 70-ton loaded TOFC cars—most of them—around the 4.8-mile FAST Track loop at speeds of up to 45 miles an hour for as much as 16 hours a day, five days a week. The Association of American Railroads (AAR) has arranged with its various member railroads for the loan of motive power over three month intervals.

During the remaining hours every workday when the consist is not running, other necessary tasks are accomplished. Track and mechanical static measurements are made, the locomotives are refueled, safety inspections are conducted and the FAST consist is revised. Each test day, four cars are removed from the consist for inspection and measurement so that the entire consist moves through this cycle at least every 22 working days. Every day, the train is turned around to change direction of travel on the loop. Every second day, eight of the cars are moved from the head end to the rear of the consist. With over 90 cars available, enough spares are kept on hand for replacement of bad-order cars.

Daily records are kept of speeds, throttle positions, fuel consumption, distance traveled (number of circuits of the loop completed), brake applications and any unusual events. The FAST Track is inspected for wear and degradation every working day by an experienced track walker, a self-contained track geometry car and an onboard rail break detection system magnetic sensing units developed at the Test Center and mounted on one of the FAST consist cars.

To facilitate servicing the test train, a FAST Service Facility was built adjacent to the FAST Track in the first half of 1977. The facility consists of a building 140 feet long and 60 feet wide with two through tracks inside, one having a service pit 100 feet long, for inspection and maintenance of rolling stock.

Other facilities at the Transportation Test Center can also be used to support FAST. These facilities include the large Center Services Building which has a 300-foot by 100-foot high bay area with four inside service tracks (two with pits), a wheel trueing lathe and a pair of 30-ton overhead bridge cranes. Outside are three storage tracks and a wash rack. Also available are facilities for instrumentation development and support, computer systems capabilities and various functional shops.

Access to the Test Center is provided by tracks of the Missouri Pacific and Santa Fe Railroads.

FAST TRACK measurements

Data from the FAST Project is generated by periodic measurements of the track structure elements. Intervals are determined by tonnage over the track (generally, every 25 MGT for most measurements) plus out-of-cycle measurements made before and after any track maintenance operations that could have an effect on the measurement.

Static measurements, taken when the FAST consist is not running, are intended to evaluate the effects of traffic on track condition. Dynamic measurements, most of them taken while the consist is running, are intended to determine the effects of weight and movement on the track.

Static and dynamic measurements taken only at specific FAST Track sections are listed in the following descriptions of the individual sections. In addition, the following measurements are taken over the entire FAST Track.

Data van used for recording dynamic measurements from roadbed sensors via wayside junction box.

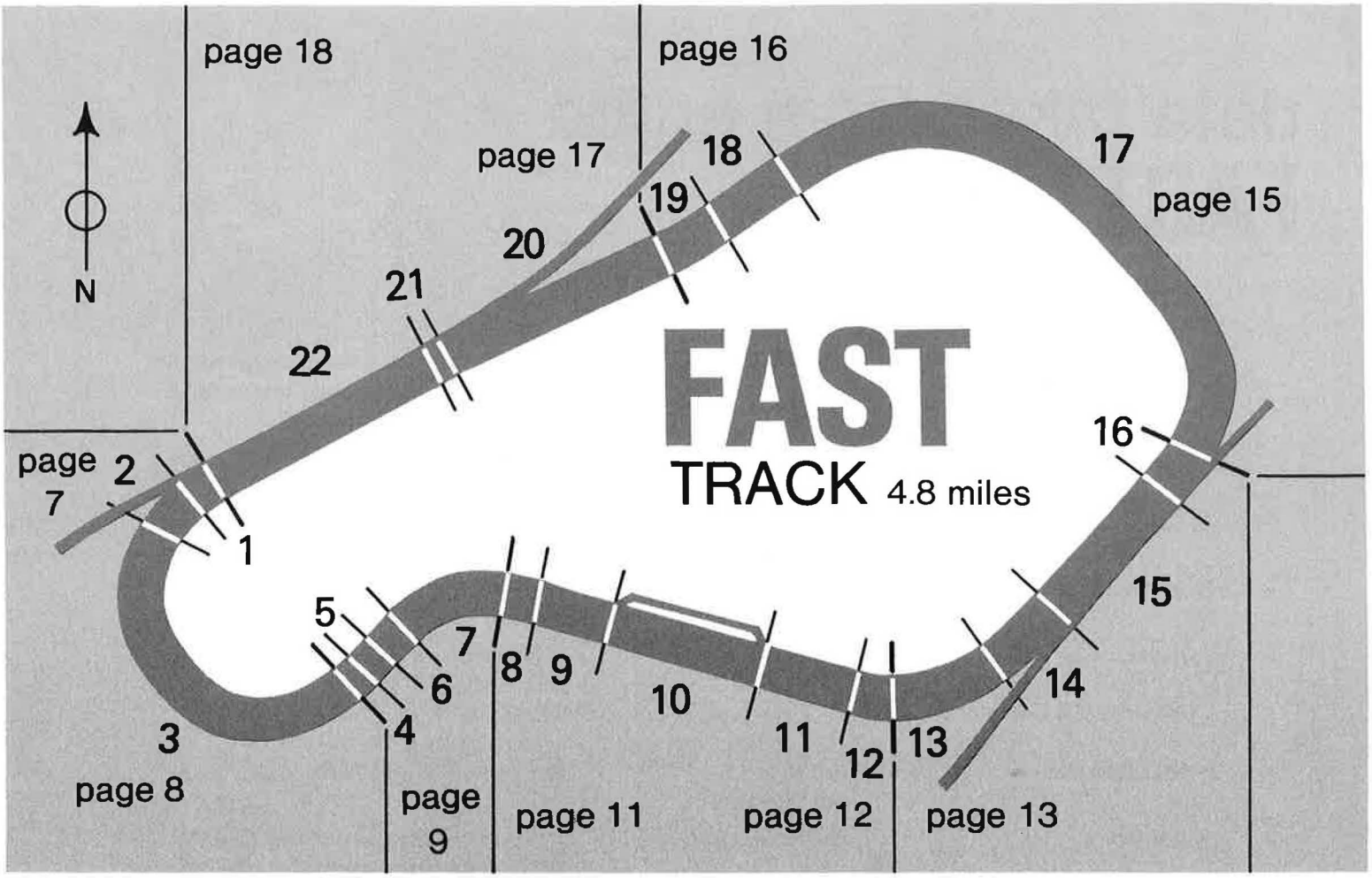
data taken from entire **FAST TRACK**

STATIC MEASUREMENTS		
Track Inventory & Comments	Visual Inspection	Covers all railroad track materials installed, removed or in storage (including all track maintenance performed).
Rail Hardness	Portable hardness tester	Every 200 ft. (3 in. from profile measurements in Sections 3, 13 & 17).
Survey to Benchmark	Electronic surveyor and track gage	Every 100 ft. except for turnouts, joints & frogs.
Track Inspection	Visual	Half of track inspected by Track Inspector each day.
Ballast Shoulder Width	Engineer's scale	Made at Survey to Benchmark locations.
DYNAMIC MEASUREMENTS		
Rail Flaw Detection	Rail flaw detection vehicle	Run twice a week over entire track.
Flaw Mapping	Hand-held sensor	At sites discovered by rail flaw detection vehicle; flaw growth checked at lease once a week.
Track Geometry	Track geometry car (self-contained)	One run daily (in AM) plus as required after track maintenance.
Weather	Weather instruments continuously measured.	

FAST TRACK maintenance

One function of the FAST Project is to provide valid information for maintenance comparisons of various types of track components. Track wear is primarily dependent upon four factors. Three of them—gross tonnage over the track, dynamic forces on the components due to train speeds, and the deterioration from weather and aging—have highly consistent effects under FAST operating conditions. The one remaining factor—maintenance—is scheduled on the FAST Project on the basis of actual needs detected by monitoring accurate instrumentation and experienced visual inspection. This maintenance is never deferred out of financial considerations, therefore, FAST Track maintenance data has great significance in any comparison of track component cost-effectiveness of similar studies.

FAST operations conform to FRA Class standards and speed restrictions. However, some FAST Standards, without FRA Class equivalents, have evolved to meet unique initial quality control requirements and to document the deterioration of track condition from these limits. FAST Standards for new track construction of out-of-face maintenance have limits more stringent than FRA Class 6. The FAST Standard which required immediate (within 1 MGT) repair or a Slow Order, has the same limits as FRA Class 4.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FAST
TRACK 4.8 miles
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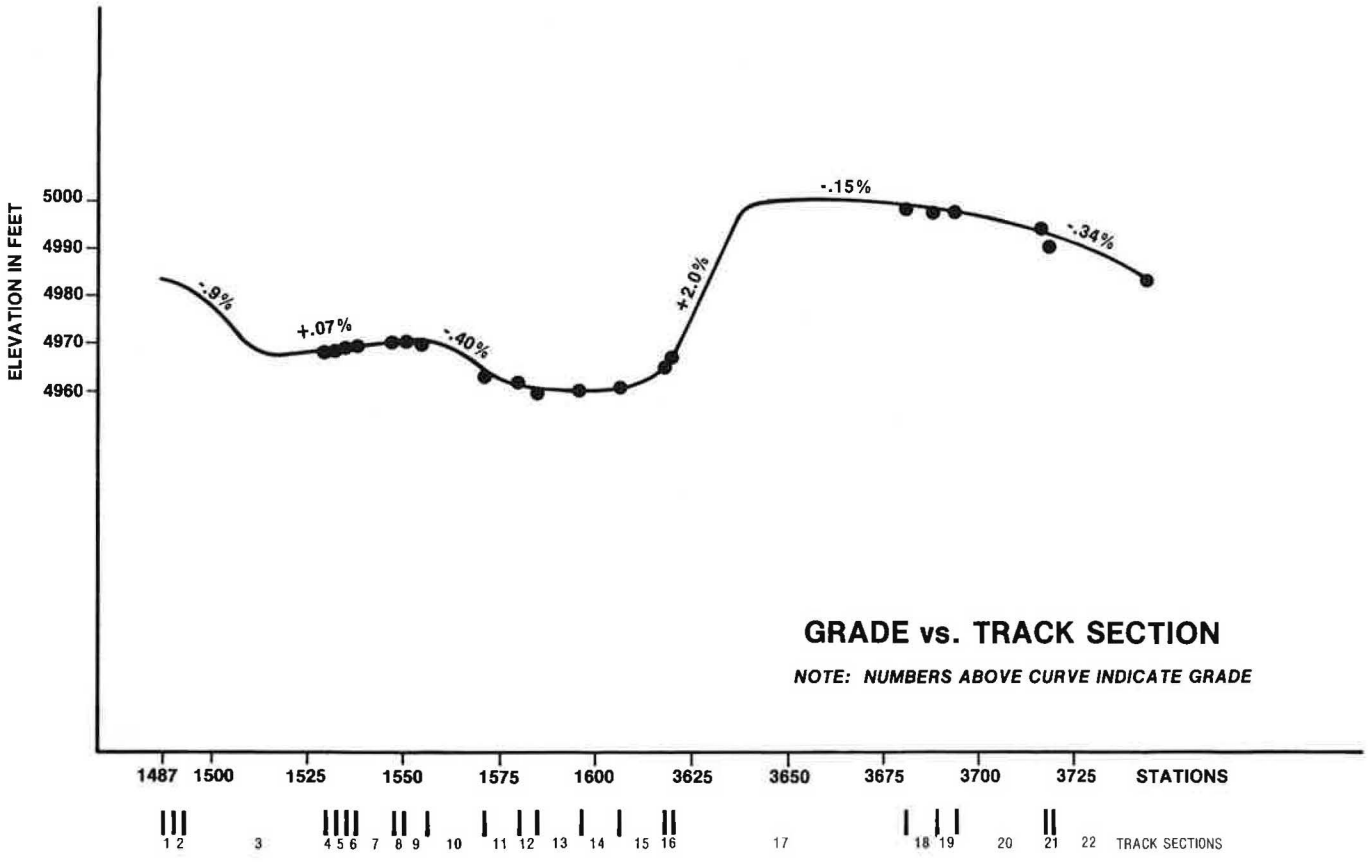
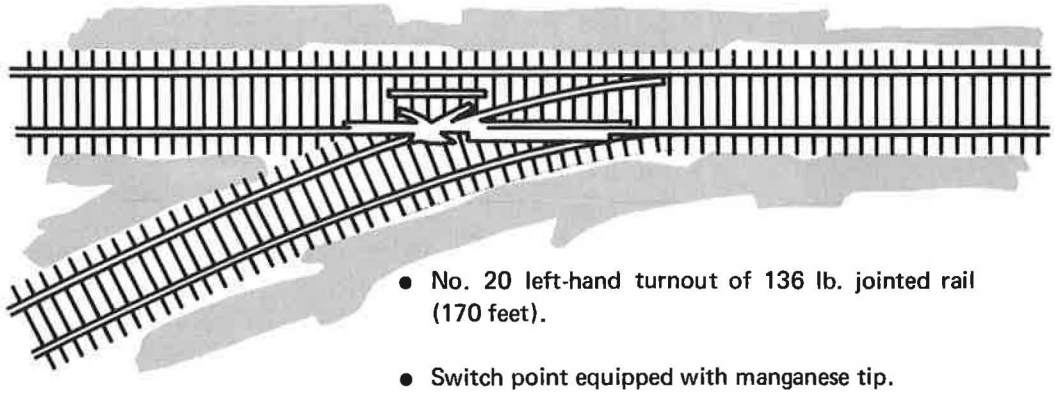

ELEVATION IN FEET
5000
4990
4980
4970
4960
-.9%
+.07%
-.40%
+2.0%
-.15%
-.34%
GRADE vs. TRACK SECTION
NOTE: NUMBERS ABOVE CURVE INDICATE GRADE
1487 1500 1525 1550 1575 1600 3625 3650 3675 3700 3725 STATIONS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 TRACK SECTIONS

1

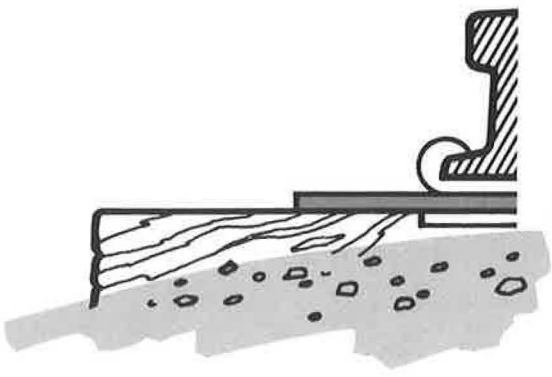


Standard No. 20 Turnout

- No. 20 left-hand turnout of 136 lb. jointed rail (170 feet).
- Switch point equipped with manganese tip.
- Wood ties 7 in. x 9 in. x 9 ft. long, 19½ in. center-to-center.
- Rail anchors, 16 per rail length.
- Standard tie plates, 7 ¾ in. x 14 in., 1:40, with four 6 in. x 5/8 in. reinforced throat cut spikes (five spikes on curves over 2^{o}).
- Slag ballast: 12 in. lower, 3 in. upper, on tangent all under low rail on curve.
- Static measurements in this section are: Joint Surface Profile, Frog Wear, Guard Rail Wear.

2

Rail Lubricator



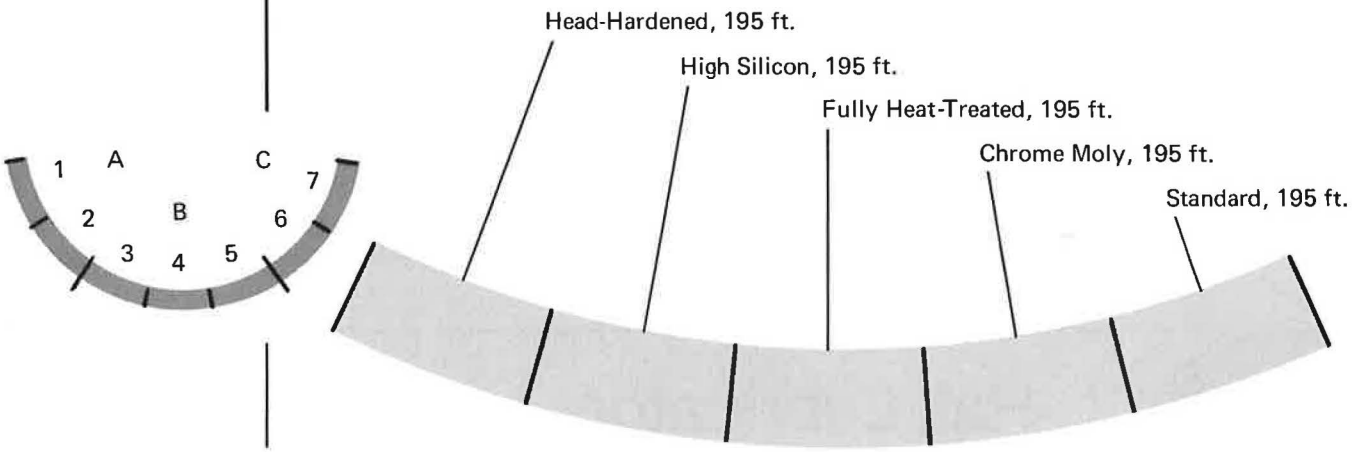
- 329.3 ft. of track; 29.3 ft. tangent, 300 ft. spiral.
- Rubber pad under every tie plate, remaining from previous experiment.
- Single rail lubricator.
- 140 lb. fully heat-treated welded rail with used rail anchors box anchored at every tie.
- Rail respiked in same positions after installation of wood tie plugs.
- Static measurements in this section are Tie Plate Cutting and Pad Performance.
- Dynamic measurements are Vertical Track Stiffness and Tie Pad Crushing.

3

Rail Metallurgy and Tie Plate Cant

- 3,740 ft. of track; 3,672.7 ft. of 5^{o} curve, 67.3 ft. of 300 foot spiral in segment 7.
- Rail metallurgy and tie plate cant test zone consists of 3,000 ft. in the center of Section 3.
- Fifteen 195 ft. strings of 136 lb. and 140 lb. rail bolted together.
- Rail anchors box anchored at every tie for one rail length at each side of rail joints, and at every second tie elsewhere throughout the section.
- 5 spikes per plate; rails respiked in original spike holes after installation of wood tie plugs.

Composition of Segments A through C



SEGMENT	TIE PLATE	LENGTH
1	Standard*	400 ft.
2	8 ½ in. X 16 in. 1:30 cant	400 ft.
3	7 ¾ in. X 14 in. 1:14 cant	600 ft.
4	Standard*	400 ft.
5	8 ½ in. X 16 in. 1:30 cant	600 ft.
6	7 ¾ in. X 14 in. 1:14 cant	400 ft.
7	Standard*	200 ft.

*7 ¾ in. X 14 in. 1:40 cant

- Static Measurements in this section are Rail-Wheel Contact, Tie Plate Cutting, Joint Surface Profile, Rail Head Profile and Rail Corrugation.
- Dynamic Measurements are Tie Plate Load, Rail Lateral Force, Vertical Track, Stiffness and Lateral Rail Displacement.

4

140 lb. Continuous Welded Rail

- 210.7 ft. of 300 foot spiral.
- 140 lb. continuous welded rail.
- Used rail anchors box anchored every second tie.
- Static Measurement in this section: Joint Surface Profile.

5

Bonded Joints and Rail Lubricator

- 222 ft. of track; 22 ft. of 300 foot spiral, 200 ft. of tangent.
- Field-assembled bonded joints with existing 136 lb. standard rail.
- Double rail lubricator.
- Ties spaced where necessary so that bonded joints are unsupported.
- Used rail anchors box anchored at every second tie.
- Static measurements in this section are Joint Surface Profile and Joint Insulation.
- Dynamic measurements are Tie Plate Load and Joint Vertical Displacement.

TWELVE PAIRS OF BONDED JOINTS STAGGERED 19½ ft. W/39 FOOT RAIL AS FOLLOWS:

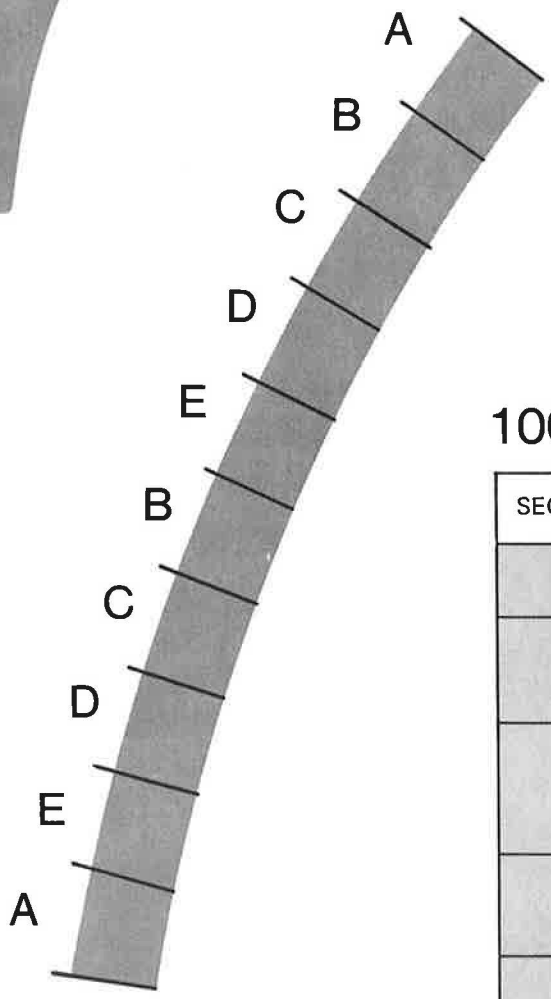
TYPE	BONDED JOINT
1	Non-Insulated
2	Insulated
3	Insulated
4	Non-Insulated
5	Non-Insulated
6	Bonded Joint

6

140 lb. Continuous Welded Rail

- 300 ft. of 300 foot spiral.
- 140 lb. continuous welded fully heat-treated rail.
- Rail anchors box anchored every second tie.

7 Rail Tie Fasteners



- 1000 ft. of 5^{o} curve.
- 140 lb. continuous welded fully heat-treated rail.
- New softwood ties.
- Static Measurements in this section are Tie Plate Cutting, Rail Creep and Gage Measurement.
- Dynamic Measurement Vertical Track Stiffness.

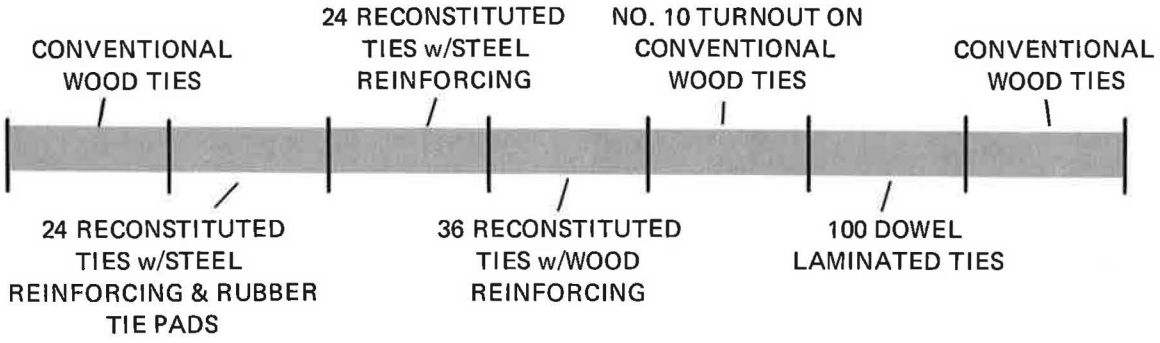
100 Foot Segments

SEGMENT	RAIL/TIE FASTENERS	RAIL ANCHORS	TIE PLATES
A	3 Cut Spikes Per Plate	USED	Standard
B	2 Cut Spikes on Plate, 2 Compression Clips at Rail	Every 2nd Tie	
C	Spring Clip, 2 Screw Spikes on Plate	None	Spring Clip Plate
D	Spring Clip, 2 Cut Spikes on Plate		
E	Spring Clip, 2 Drive Spikes on Plate		

8 Wood Tie Plugs

- 300 ft. of 300 foot spiral.
- 140 lb. continuous welded rail fully heat treated.
- Wood tie plugs and used rail anchors, box anchored at every tie.

9 Reconstituted and Laminated Wood Ties



- 628 ft. of tangent track.
- 136 lb. standard jointed rail.
- Includes turnout to FAST Service Facility.
- Static Measurements in this section are Tie Plate Cutting, Tie Insulation, Frog Wear, Frog Hardness, Guard Rail Wear and Gage Measurement.
- Dynamic Measurements are Tie Plate Load and Vertical Track Stiffness.

10 Elastic Spikes, Safety Equipment, Turnouts, Spring Frogs, Guard Rail

MAIN TRACK

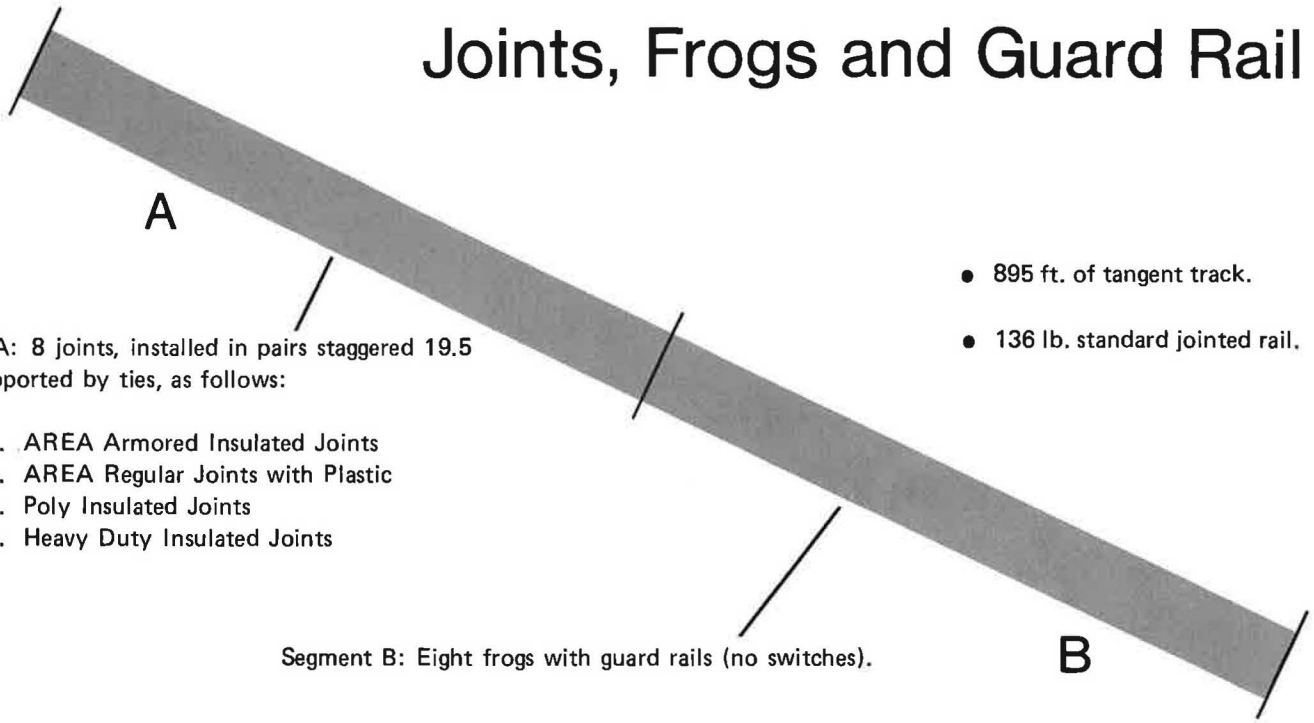
- 1,550 ft. of tangent track.
- 136 lb. jointed rail.
- 300 special ties and tieplates with double type elastic spikes and no rail anchors.
- 300 foot segment for testing safety equipment.
- 133 lb. No. 14 spring frogs with long entrance flare guard rail. (no switches).
- Twenty 12 ft. ties at each frog (not centered under the track).
- Static measurements in this section are Tie Plate Cutting, Frog Wear, Frog Hardness, Guard Rail Wear, and Gage Measurements (Elastic Spikes Segment).

BYPASS

- Two #20 Turnouts.
- 136 lb. continuous welded rail.

- Used rail ranchors box anchored every second tie.
- Dynamic measurements are Vertical Track Stiffness and Spike Pullout.

Joints, Frogs and Guard Rail



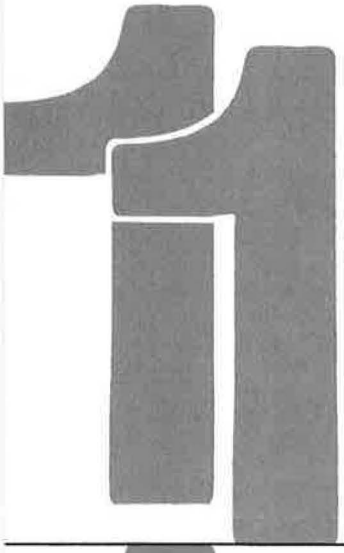
- 895 ft. of tangent track.
- 136 lb. standard jointed rail.

Segment A: 8 joints, installed in pairs staggered 19.5 feet unsupported by ties, as follows:

1. AREA Armored Insulated Joints
2. AREA Regular Joints with Plastic
3. Poly Insulated Joints
4. Heavy Duty Insulated Joints

Segment B: Eight frogs with guard rails (no switches).

MATERIAL	GUARD RAIL
Hammer Hardened Manganese	Standard
Standard Cast Manganese	Standard
Hammer Hardened Manganese	Long
Standard Cast Manganese	Long



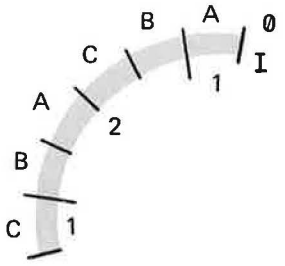
- Static Measurements in this section are Joint Surface Profile, Joint Insulation, Frog Wear, Frog Hardness and Guard Rail Wear.
- Dynamic Measurement Joint Vertical Displacement.

136 Pound Jointed Rail

- 339 ft. of track; 300 ft. of spiral and 39 ft. of 4^{o} curve.
- 136 lb. standard jointed rail.

Rail Metallurgy

- 1248 ft. of 4° curve.
- 115 lb. continuous welded rail in strings (see Chart) joined by rail joints, each end.
- Used rail anchors box anchored at every second tie.



INSIDE RAIL TYPE	LENGTH
1—Fully Heat-Treated	310 ft.
2—High Silicon	628 ft.

OUTSIDE RAIL TYPE	LENGTH
A—Standard	200 ft. (2 blocks)
B—High Silicon	200 ft. (2 blocks)
C—Fully Heat-Treated	200 ft. (2 blocks)

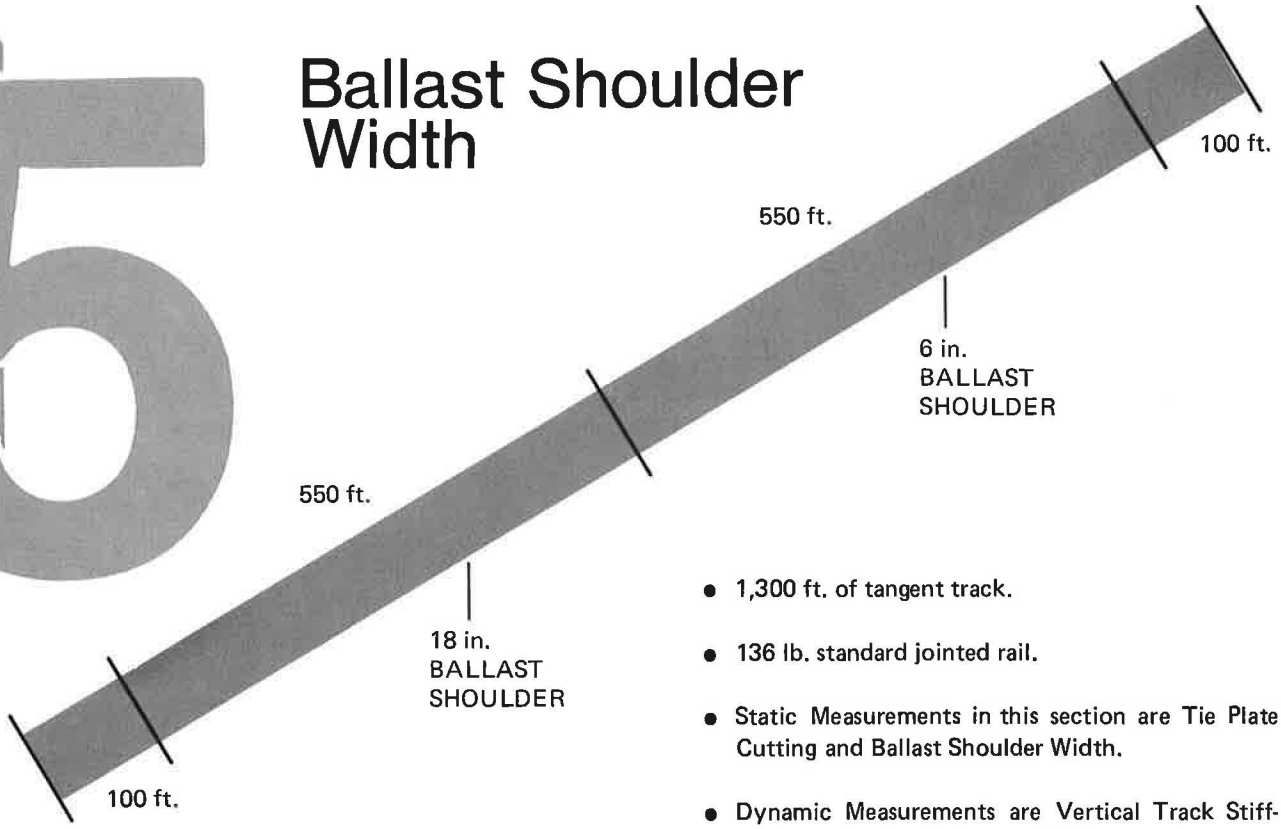
- Static Measurements in this section are Tie Plate Cutting, Rail Head Profile and Rail Corrugation.
- Dynamic Measurements are Vertical Track Stiffness and Spike Pullout.

Standard No. 20 Turnout and Rail Lubricator

- 818 ft. of track, 38 ft. of 4° curve, 300 ft. of spiral and the remainder tangent track.
- Standard No. 20 turnout.
- Double rail lubricator.
- Jointed 136 lb. standard rail and 115 lb. Hi-Silicon Rail.
- Static Measurements in this section are Frog Wear, Frog Hardness and Guard Rail Wear.

5

Ballast Shoulder Width



- 1,300 ft. of tangent track.
- 136 lb. standard jointed rail.
- Static Measurements in this section are Tie Plate Cutting and Ballast Shoulder Width.
- Dynamic Measurements are Vertical Track Stiffness and Horizontal Track Stiffness.

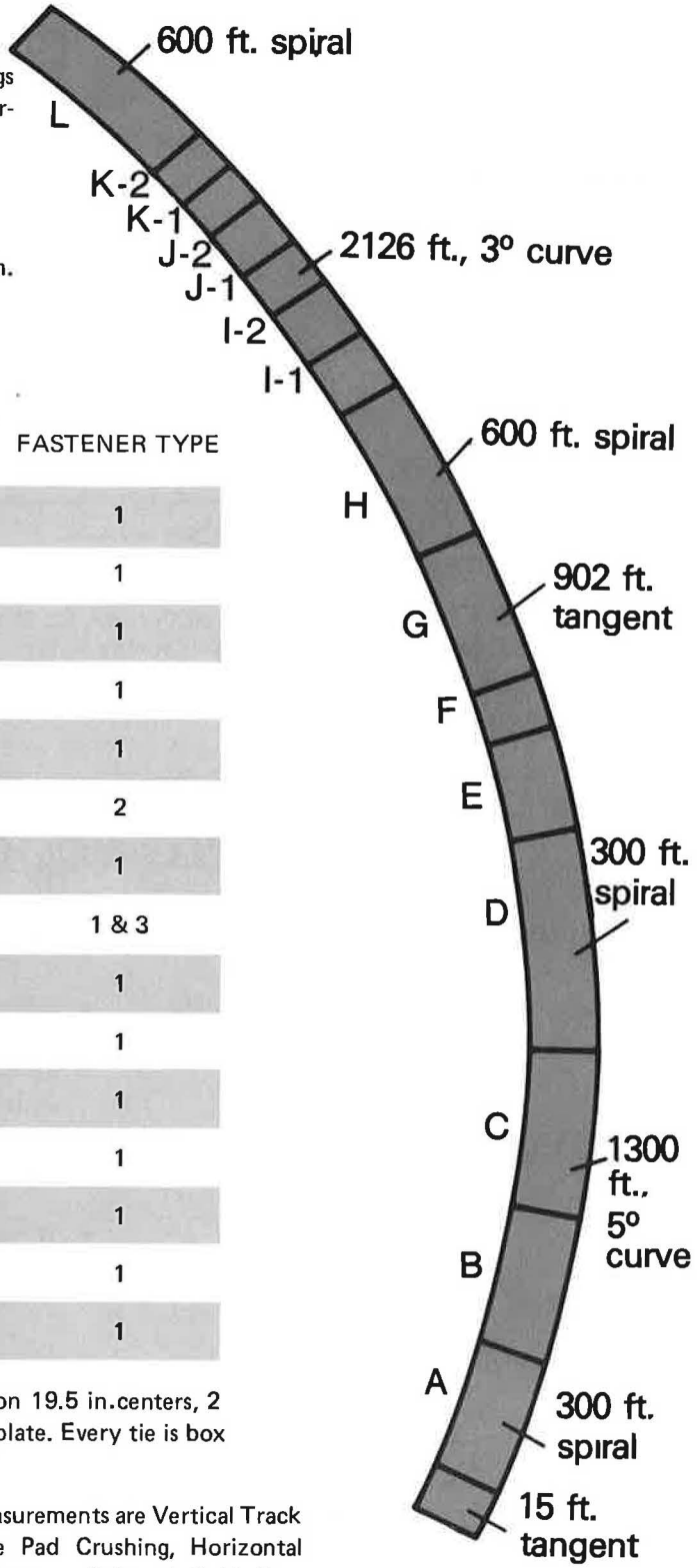
6

Glued No. 20 Turnout

- 222 ft. of track, glued No. 20 left-hand turnout on tangent.
- 59 ½ ft. switch point and stock rails of 140 lb. heat-treated steel, with standard manganese guard rails.
- Switch point equipped with manganese tip.
- Used rail anchors box anchored every second tie.
- Blast furnace slag ballast.
- Static Measurements in this section are Frog Wear, Frog Hardness, Guard Rail Wear, Joint Surface Profile and Joint Insulation.

17 Concrete Ties, Tie Pads and Rail Lubricator

- 6,143.31 ft. of track; field-welded strings of 136 lb. continuous welded rail different types of premium rail.
- 24 in. center-to-center tie spacing.
- 12 in. granite ballast under ties, 12 in. shoulders.
- Single rail lubricator.



SEGMENT	LENGTH	NO. OF TIES	TIE TYPE	PAD	FASTENER TYPE
A*	526 ft.	263	1	P-1	1
B	324 ft.	162	2	P-1	1
C	324 ft.	162	1	P-2	1
D	526 ft.	263	2	P-2	1
E	400 ft.	200	1	P-3	1
F	202 ft.	101	3	P-4	2
G	500 ft.	250	4	P-2	1
H	700 ft.	350	5	P-5	1 & 3
I-1	250 ft.	125	4	P-1	1
I-2	250 ft.	125	4	P-6	1
J-1	362 ft.	181	1	P-6	1
J-2	364 ft.	182	1	P-7	1
K-1	136 ft.	68	2	P-7	1
K-2	364 ft.	182	2	P-2	1
L	600 ft.	300	6	P-8	1

*The track section preceding Segment A has 10 ft. hardwood ties on 19.5 in.centers, 2 hold-down spikes and 2 compression rail anchor clips at every tie plate. Every tie is box anchored.

- Static Measurements in this section are Longitudinal Rail Stress, Pad Set, Tie Insulation, Rail Head Profile, Tie Movement Survey, Ballast Gradation, Tie Pad Movement, Tie Insulator/Fastener Movement, Concrete Tie Inspection (Top and Face), Pad Performance and Rail Corrugation.
- Dynamic Measurements are Vertical Track Stiffness, Tie Pad Crushing, Horizontal Track Stiffness, Subgrade-Subballast Strain, Subballast-Ballast Strain, Concrete Tie Stress, Subgrade-Ballast Strain, Tie Rail Acceleration, Subgrade-Ballast Load and Rail Vertical Load.

Ballast Depth and Rail Lubricator

- 822 ft. of tangent track.
- 136 lb. standard jointed rail on 7 in. x 9 in. x 8.5 ft. hardwood ties, 19.5 in. center-to-center.
- Standard tie plates with four spikes per plate.
- Sixteen used rail anchors box-anchored per rail length.

Segment A	507 ft. long.	Granite ballast 18 in. under ties.
Segment B	315 ft. long.	Granite ballast 12 in. under ties.

- Static Measurements in this section are Tie Plate Cutting, Ballast Cross Section and Ballast Gradation.
- Dynamic Measurements are Tie Plate Load, Vertical Track Stiffness, Subgrade-Subballast Strain, Subballast-Ballast Strain, Subgrade-Ballast Strain, Tie-Rail Acceleration, Subgrade Ballast Load and Wheel Detector.

Hardwood and Softwood Ties

- 600 ft. of track on 300 ft. spiral.
- 136 lb. standard jointed rail.
- All ties 7 x by 9 in.x 8.5 ft., 19.5 in. center-to-center.
- Standard tie plates, four spikes per plate.
- 16 used rail anchors box-anchored per rail length.
- Granite ballast 12 in. under ties.
- 6 in. ballast shoulders.

Segment A	1. 300 ft. long.	2. Hardwood ties.
Segment B	1. 300 ft. long.	2. Softwood ties.

- Static Measurements in this section are Tie Plate Cutting and Tie Insulation.
- Dynamic Measurements are Vertical Track Stiffness and Spike Pullout.

Ballast Types and Depths; Rail Anchors

- 2,278 ft. of tangent track.
- 136 lb. standard jointed rail.
- Standard tie plates, 4 spikes per plate.
- 7 in. x 9 in. x 8.5 ft. hardwood ties, 19.5 in. center-to-center.

Ballast Types and Depths

SEGMENT	DEPTH	MATERIAL	TRACK LENGTH
A	6 in.	Granite	312 ft.
B	12 in.	Limestone Type 1	312 ft.
C	18 in.	Limestone Type 1	312 ft.
D	18 in.	Trap Rock	156 ft.
D_1	18 in.	Limestone Type 2	156 ft.
E	12 in.	Limestone Type 2	156 ft.
E_1	12 in.	Trap Rock	156 ft.
F	12 in.	Blast Furnace Slag	312 ft.
G	18 in.	Blast Furnace Slag	406 ft.

- Static Measurements in this section are Tie Plate Cutting, Rail Creep, Ballast Cross Section and Ballast Gradation.

Rail Anchors (16 Per Rail Length)

SEGMENT	BOX ANCHOR TYPE	TRACK LENGTH	APPROX. NO. OF ANCHORS
a	1		
b	2		
c	3	429 ft.	352
d	4		
e	5 (new)		
f	5 (used)	133 ft.	112

- Dynamic Measurements are Tie Plate Load, Vertical Track Stiffness, Subgrade-Subballast Strain, Subballast-Ballast Strain, Subgrade-Ballast Strain, Tie-Rail Acceleration and Wheel Detector.

No. 20 Welded Turnout

- 172 ft. of tangent track with a welded No. 20 turnout.
- 59.5 ft. switch point and stock rails, 140 lb. heat-treated steel.
- Switch point equipped with manganese tip.
- Standard manganese guard rails.
- Used rail anchors box-anchored every second tie.
- Blast furnace slag ballast.
- Static Measurements in this section are Joint Surface Profile, Frog Wear, Frog Hardness, Guard Rail Wear and Joint Insulation.

Spiking Patterns and Rail Anchors

1,950 Feet of Tangent Track

- 136 lb. standard continuous welded rail.
- Tie plates with only two spikes per plate at the rail in a 1,000 ft. segment of this section.
- Five 302 ft. segments box-anchored every second tie with different anchor types.
- 136 lb. No. 10 turnout for FAST/RTT crossover.
- Static Measurements in this section are Rail-Wheel Contact, Tie Plate Cutting Longitudinal Rail Stress, Rail Creep and Joint Surface Profile.
- Dynamic Measurements are Tie Plate Load and Vertical Track Stiffness.

FAST mechanical measures

Static Measurements

Cars in the FAST consist are used as testing vehicles to compare the performance and determine the cost-effectiveness of various car component designs. Every operating day a block of four cars is removed from the FAST consist for inspection at the FAST Service Facility. During these periodic inspections, static measurements of the components involved in the mechanical experiments are made and recorded. The measurements begin prior to each car entering the FAST consist and a final measurement is made when the testing of a particular component is completed. The following list describes the static measurement experiments being conducted at the end of the first year of FAST operations.

Detailed inspection of all FAST consist cars yields measurement data for studies of car component performance and cost-effectiveness.

FAST mechanical experiments

COMPONENT	PURPOSE	DESIGNS	NO. OF CARS
Truck Wheels	Compare wear rates of various wheel designs	Heat-treated vs. Untreated One-wear vs. two-wear vs. multi-wear. Cast steel vs. wrought CN profile vs. AAR Standard profile (wide vs. narrow flanges).	77
Roller Bearings	Determine grease loss from specific roller bearings.	New vs. reconditioned bearings from three manufacturers.	30
Roller Bearing Adapters	Compare wear rates at specific points in various types of roller bearing adapters	Unhardened vs. Hardened crown vs. hardened crown and thrust shoulder.	27
Trucks	Compare wear rates of various truck designs	Two types of commonly used standard trucks and four types of limited usage premium trucks.	32
Truck Springs	Compare rates of increase in permanent set and capacity loss of outer and inner load	Carbon steel vs. alloy steel (new) D5 vs. D7 (as received).	37

FAST mechanical measurements (continued)

Truck and Body Center Plates	Compare wear rates of various center plate sizes, lined and unlined truck center plates and body center plate metallurgies	14 in. dia. vs. 16 in. dia., unlined vs. lined truck center plates, carbon steel vs. manganese steel body center plates.	38
Coupler and Carrier Wear Plates	Compare wear rates of various wear plate metallurgies	J-alloy AR-360 vs. X-AR-15 vs. C-1095 vs. C-1045 vs. other coupler shank wear plates.	18
Couplers	Compare wear rates of various coupler steel grades and butt designs	C-1095 vs. C-1045 vs. manganese vs. other coupler carrier wear plates. Grade C vs. grade E steel castings. Flat vs. swivel butts.	8
Trailers on Flat Cars	Determine wear rates of king pins, hitch jams, pins, bushings and rate of change of permanent set of center sills	70-ton flat car (TOFC).	
Bathtub Coal (Hopper)	Determine rate of change of permanent set for side plates and a side sills	100-ton bathtub coal (Hopper).	3

Dynamic Measurements

Plans are being made to expand the dynamic mechanical measurement capabilities of the Test Center's Instrumentation Group. At this writing, however, the only FAST Project dynamic mechanical measurements are taken with the Train Operation Recorder System (TORS). This is a recording device in the cab of a FAST locomotive that monitors and records the key operational functions.

TORS can produce a very thorough and accurate printout of operational events, including speeds to the nearest whole MPH figure and distances to the nearest one-twentieth of a mile.

Car Mechanical Maintenance

Maintenance of the FAST consist is based on standard railroad practices. All cars and components receive a mandatory walkaround visual inspection by qualified carmen of the FAST Service Facility each day. Cars with faulty components are bad-ordered out of the consist and repaired. Any time a component being measured exceeds its condemning limit, it will be either brought to within the standards of the AAR Interchange Rules or replaced.

This brochure describes the 22 test sections of the Federal Railroad Administration's FAST Track and the various track and mechanical measurements being made as of September 1977—the end of the first year of operation at the facility. Because of the great time compression possible with the facility, some projects may be completed shortly after publication of this brochure and replaced with others. Before using the contents of this brochure as a basis for future planning, it is advisable to verify the timeliness of the information. Inquiries on the existing FAST configuration and tests may be addressed to:

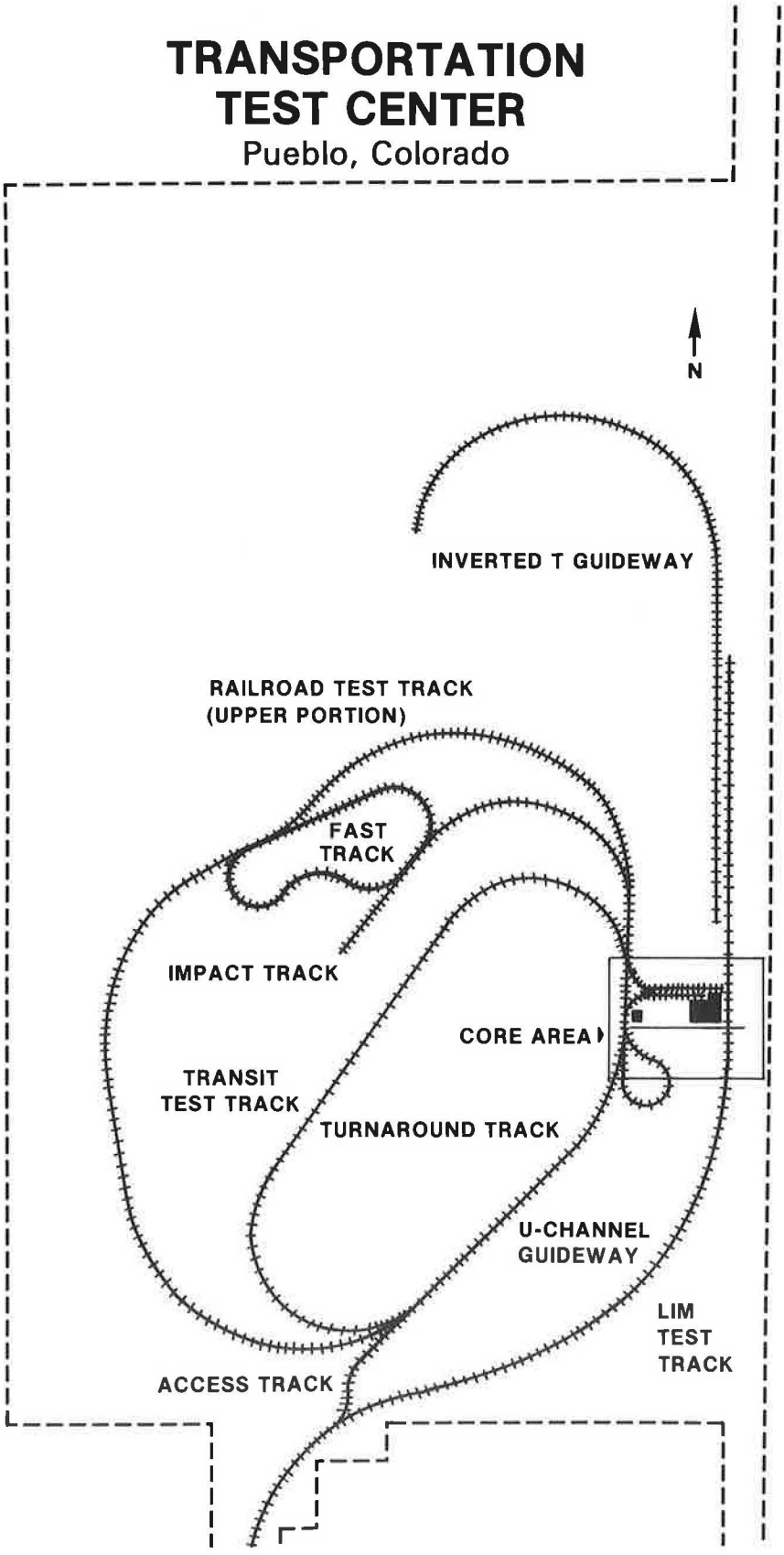
Director, Transportation Test Center
Pueblo, Colorado 81001

Inquiries of proposals regarding tests should be addressed to:

FAST Program Manager, RRD-10
Federal Railroad Administration
2100 Second Street, S.W.
Washington, D.C. 20590

TRANSPORTATION TEST CENTER

Pueblo, Colorado



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