COMMUTER RAIL STUDY

Converse, Laramie, Natrona and Platte Counties

Preliminary Submittal – Fixed Facilities

TranSystems

June 30, 2008

Produced for: The Wyoming Joint Transportation, Highways and Military Affairs Interim Committee

WYOMING DEPARTMENT OF TRANSPORTATION

WYOMING GREAT SEAL OF THE STATE

Table of Contents

Introduction and Context

TranSystems has been contracted by the State of Wyoming to determine the feasibility of initiating rail passenger service between Fort Collins, Colorado and Casper, Wyoming. This scoping assessment has primarily focused on the active BNSF Railroad alignment that serves these two points via the state capitol in Cheyenne. This line is presently a freight-only corridor for BNSF and includes parts of three railroad subdivisions, covering a distance of approximately 265 miles. Portions of other alignments between Fort Collins and Casper, both active and abandoned, have been reviewed in this scoping assessment but appear to provide little or no potential service advantages while substantially escalating fixed facility costs.

Interest in intercity passenger rail service has grown markedly across the nation over the past five years in response to rising fuel costs, highway congestion and concern over greenhouse gas emissions. Commercial airline service to small and medium-sized cities, often tenuous, has suffered major cutbacks over the past two years as carriers react to the dramatic escalation of fuel costs. Good access to the national air service network may increasingly translate to rapid and reliable surface transportation to and from the Denver International Airport for many Wyoming residents in the years to come.

Policy task forces at the federal level have made clear a need to more directly address the rail mode in upcoming funding regimes. In 2007, the Bush administration, for the first time, put in place a federal matching program for state investments in intercity passenger rail. This program, while modest, provides a platform from which federal engagement with state investment regimes for rail service may continue to grow.

Finally, the interest of adjoining states in developing a modern and robust north-south rail service alignment extending northward from New Mexico brings into focus the advantages that Equality State residents might enjoy by investing, at the margin, in extensions of service northward from the Colorado state line. Wyoming's access to good-quality regional rail transportation is thus uniquely tied to the success of multi-state initiatives for the Front Range.

Early efforts to include a front-range alignment as the nation's eleventh designated "High Speed Rail" corridor began in 2004 with the founding of the Front Range Commuter Rail advocacy group. Such a designation carries the possibility of enhanced federal matching funds for corridor studies and grade crossing improvements, but also requires that significant portions of an alignment be shown capable of service speeds in excess of 90 miles-per-hour.

This assessment of passenger rail service is purposefully biased in the direction of more careful attention to the earlier-phase and less costly development schemes for passenger rail operations in the southeast portion of the state. We have not, as of this writing, been in a position to dovetail service speed, equipment and frequency assumptions with the just-initiated Rocky Mountain Rail Authority study in Colorado, but it is our intent to do so in the next phase of work. This will permit the study team to further refine capital and operating cost estimates as well as to better describe the potential service features that would be available to Wyoming residents.

Study Background

TranSystems has been contracted by the State of Wyoming to determine the feasibility of initiating rail passenger service on the rail lines of the BNSF Railway between Fort Collins, Colorado and Casper, Wyoming. This line is presently a freight only corridor for BNSF and there are parts of three railroad subdivisions utilized to cover this distance of approximately 265 miles.

Passenger Train History

The Colorado & Southern Railway (C&S), a subsidiary of the Chicago, Burlington & Quincy Railroad (CB&Q), operated passenger service on this line with trains running the entire distance of the line which extends from Denver, Colorado to Billings, Montana. The CB&Q was merged into the Burlington Northern Railroad in 1970 and this train had already been terminated before the merger in 1967 due to the loss of the mail contract and very few riders.

This last train on the route was a "local train" in that it served virtually every community along the 667 mile route between Denver and Billings, Montana. The primary purpose of the train was as a mail carrier. The train carried two working storage mail cars, a railway post office car, and a single coach for any passengers.

The northward train, #29 was scheduled at nineteen hours and thirty minutes for the 667 mile run. This equated to an average speed of 34.2MPH, which was really quite an accomplishment considering the maximum authorized speeds for passenger trains was 59MPH between Denver and Wendover, and 50MPH between Wendover and Billings. Included within this schedule were "station times" of 43" at Cheyenne, 40" at Casper and 40" at Worland to handle the volume of mail loaded off and on the train. The southward train, #30 was scheduled at eighteen hours and five minutes which equated to an average speed of 36.9MPH. Scheduled "station time" at Worland was 40", Casper 50", and Cheyenne 14" to handle the mail volume.

The passenger rail service was augmented by parallel bus service between Denver and Cheyenne as the Colorado Motorway Bus Company honored rail tickets on their busses.

The schedule of this train as it operated in 1966 is shown on the following page. Note the railroad timetable also showed the bus services on the same route. Supporting bus service as an alternative for the patrons of the service is very important to provide other travel alternatives where rail passenger service is limited.

Burlington Lines

To the Black Hills, Dude Ranches and Pacific Northwest

CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY

Table 11—DENVER, CHEYENNE AND BILLINGS.

....	Bus.	Bus.	29	Mls.	*June*, 1966.	30	Bus.	.....	.....
....	‡AM	‡AM	P M	.....	LEAVE (*Mt. time.*) ARRIVE	A M	‡PM	.....	.....
....	*11 30	*9 00	f8 30	0	+..Denver (*C. & S.*).	7 35	2 25	.....	....
....	.....	.....	f8 57	14	.....Broomfield.....	f7 07	.....	.....	.....
....	.....	.....	f9 05	19	..... Louisville	f6 58	.....	.....	.....
....	.....	.....	9 14	28	+.....Boulder.....	6 46	.....	.....	.....
....	12 34	10 04	9 39	40	+..... Longmont	6 19	1 20	.....	.....
....	12 51	10 21	f10 15	51	+.....Berthoud.....	f5 55	1 02	.....	.....
....	1 03	10 33	10 37	57	+.....Loveland.....	5 40	12 50	....	....
....	1 25	10 55	11 08	71	..... Ft. Collins	5 23	‡1230	.....	.....
....	P M	A M	f11 23	82	.....Wellington.....	f4 54	P M	.....	.....
....	.....	.....	12 06	116	arr..+Cheyenne..lve.	4 15	.....	.....	.....
....	.....	.....	12 49	116	lve.....Cheyenne....arr.	4 01	.....	.....	.....
....	.....	.....	f1 17	136	.....Federal.....	f3 33	.....	.....	.....
....	.....	.....	1 35	149	+.....Horse Creek.....	3 13	.....	.....	.....
....	.....	.....	f1 49	159	.....Farthing.....	f2 55	.....	.....	.....
....	.....	.....	2 23	185	+.....Chugwater.....	2 23	.....	.....	.....
....	.....	.....	3 16	211	+.....Wheatland	1 30	.....	.....	.....
....	.....	.....	- -	227	.....Dwyer.....	f1 18	.....	.....	.....
....	.....	.....	4 00	238	arr.....Wendover....lve.	1 03	.....	.....	.....
....	.....	.....	.....	249	lve... +Guernsey ....arr.	.....	.....	.....	.....
....	.....	.....	4 02	238	lv. Wendover△(C. B. & Q.) ar.	1 00	.....	.....	.....
....	.....	.....	4 25	254	.....Glendo	12 28	.....	.....	.....
....	.....	.....	f4 44	269	.....Orin△.....	f12 09	.....	.....	.....
....	◈	.....	4 59	284	+.....Douglas.....	11 54	.....	◈	◈
....	Bus.	.....	5 36	313	. .....Glenrock.....	11 13	....	Bus.	Bus.
....	P M	.....	6 20	337	arr.....+Casper..lve.	10 45	....	P M	A M
....	*3 45	.....	7 00	337	lve..... Casper.....arr.	9 55	....	3 28	5 54
....	*f* -	.....	f7 41	376	.....Powder River.....	f9 03	.....	*f* -	*f* -
....	.....	....	8 02	395	..... Arminto	8 41	.....	.....	.....
....	.....	.....	8 29	419	..... Lysite	8 10	.....	....	....
....	.....	.....	8 58	440	+.....Bonneville.....	7 40	.....	....	.....
....	.....	.....	.....	.....	...*Wind River Canyon*..	.....	.....	.....	.....
....	6 12	....	10 00	472	+.....Thermopolis.....	6 52	.....	12 45	3 19
....	....	....	10 14	484	..... Kirby△	6 30	.....	....	.....
....	.....	....	- -	489	.....Chatham△.....	-	...	.....	.....
....	6 47	.....	1040	504	arr.... +Worland..lve.	‖6 05	....	12 07	2 43
....	7 22	.....	‖1120	504	lve.....Worland .....arr.	‖5 25	.....	11 32	2 33
....	*f*	.....	11 41	523	.....Manderson△.....	5 03	....	*f* -	*f* -
....	7 57	.....	11 50	532	+.....Basin.....	4 51	....	10 57	1 58
....	8 11	.....	12 15	540	+.....Greybull.....	4 35	.....	10 49	1 49
....	.....	.....	.....	567	.....Kane.....	- -	.....	.....	.....
....	8 52	....	1 19	577	+.....Lovell	3 42	.....	10 06	1 07
....	*f* -	....	1 26	583	+.....Cowley.....	3 25	.....	*f* -	*f* -
....	9 09	.....	1 32	589	arr.....Deaver△....lve.	3 19	.....	9 47	12 50
◈	.....	.....	*c*1 45	.....	lve.....Deaver△....arr.	*c*1 15	◈	*c*9 20	.....
Bus	.....	.....	*c*2 05	.....	.....Powell.....	*c*1255	Bus.	.....	.....
P M	....	.....	*c*2 45	.....	arr.....+Cody...lve.	*c*12 15	P M	*c*8 15	.....
6 30	.....	.....	*c*12 15	....	lve.....Cody.....arr.	◗ -	12 50	*c*1100	.....
....	.....	.....	*c*1255	....	.....Powell.....	◗ -	.....	*c*1020	.....
....	.....	.....	*c*1 15	.....	arr.....Deaver△....lve.	◗ -	.....	*c*1000	.....
....	9 24	.....	1 32	589	lve.....Deaver△....arr.	3 19	.....	9 37	12 40
....	*f* -	.....	1 41	595	lve... Frannie, Wyo..arr.	3 12	.....	*f* -	*f* -
....	.....	.....	2 19	623	.. East Bridger, Mont.△..	2 39	.....	.....	....
....	*f* -	.....	2 30	629	.....Fromberg	2 30	.....	*f* -	*f* -
....	*f* -	.....	2 53	642	..... Silesia△.....	2 08	.....	*f* -	*f* -
....	10 31	.....	3 15	652	.....Laurel.....	1 47	.....	8 25	11 29
8 30	10 53	.....	‖4 00	667	+.....Billings.....⊟	‖*130	10 50	*8 00	*1105
P M	P M	.....	P M	.....	ARRIVE] [LEAVE	P M	A M	A M	P M

EQUIPMENT—Table 11.

WESTBOUND—No. 29.

Reclining Seat Chair Car—Denver to Billings.

EASTBOUND—No. 30.

Reclining Seat Chair Car—Billings to Denver.

* Daily; † daily, except Sunday; § Sunday only; *b* stops to let off revenue passengers from St. Joseph or beyond and stops on flag to receive for Council Bluffs or beyond; *c* Cody Bus Line, rail tickets honored; *f* flag stop; *p* stops to let off revenue passengers from Alliance and beyond — also stops on Mondays only for all revenue passengers; *x* stops to let off or pick up revenue passengers when notified at Hamburg; *y* stops to let off or pick up revenue passengers when notified at St. Joseph; *z* stops to receive revenue passengers for Alliance and beyond. ⊙ Connection. : Stops to let off or receive revenue passengers when notified at Crawford before 8 30 a.m. • Stops to let off or receive revenue passengers when notified at Edgemont before 6 30 p.m. ‡ Through tickets reading to and from these stations will be honored on Colorado Motorway, Inc., buses which depart from and arrive at 1730 Glenarm Place, Denver. This connection will receive or let off passengers at stop sign across driveway in front of Denver Union Station on Wynkoop Street. Ψ Flag stop Monday morning only to receive or discharge revenue passengers. △ No checked baggage to this station. ◗ Cody Bus Line will provide connection off Train 30, Deaver to Powell and Cody, upon notice to ticket agent at Billings. ◈ Northern Pacific Transport Bus Billings (N. P. Ry. station) and Cody operates June 13 through August 29. C. B. & Q. tickets honored. ◈ Continental Trailways bus; C. B. & Q. rail tickets honored. Buses do not always arrive or depart C. B. & Q. stations; consult agent. ‡ Stops to receive revenue passengers, when notified at Forest City by 10 30 a.m., and stops to let off revenue passengers. ⅄ Stops to let off revenue passengers, also will stop to pick up revenue passengers when agent at Forest City is notified by 4 30 p.m. □ Stops daily, except Saturday, Sunday and holidays. ‖ Meal stop. + Coupon stations. *C.T.*—Central time. *M.T.*—Mountain time.

For Equipment of Table 10, see page 655.

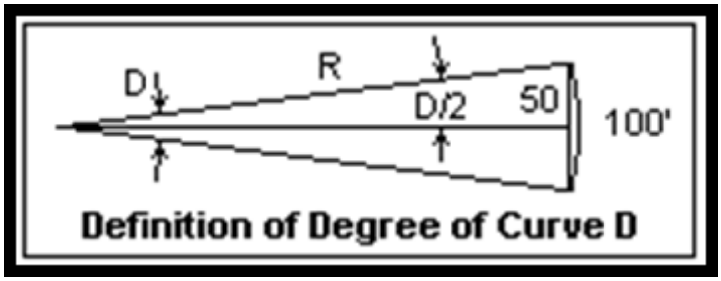
Topography and Operating Challenges of proposed Rail Corridor

The BNSF Railway identifies, controls, and maintains trackage through a given region by the method of Divisions and Subdivisions. Depending on the size of a Division and the traffic volume, a number of Subdivisions will be determined. For this study to ascertain the best perspective of the physical attributes and constraints of the 265 mile Fort Collins – Casper Corridor, we will utilize the following segmentations of the BNSF Divisions and Subdivisions to identify these issues; Ft. Collins to Cheyenne, Cheyenne to Wendover, Wendover to Bridger Jct. and Bridger Jct. to Casper.

BNSF Rail Line – Fort Collins to Casper

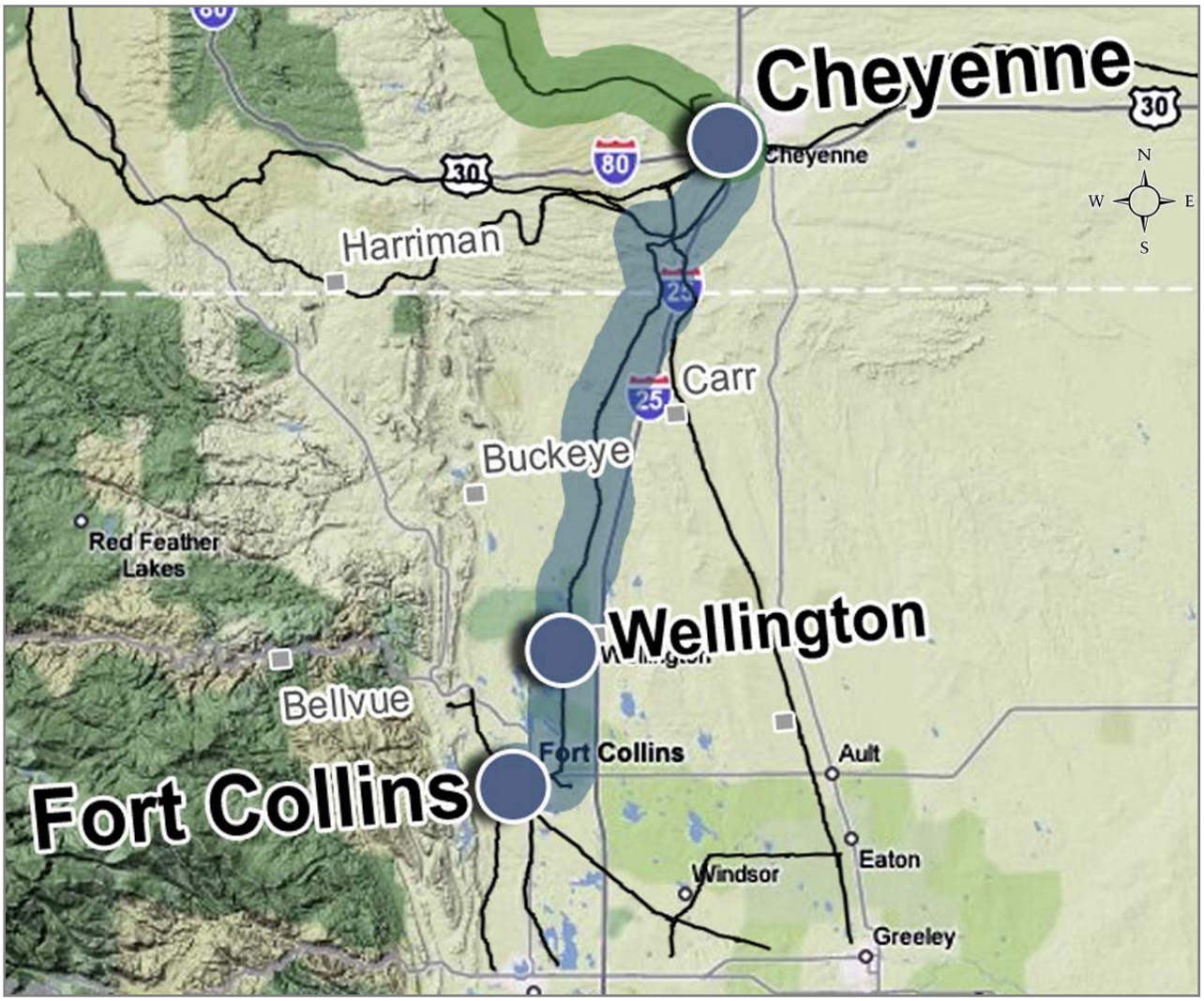
Fort Collins – Cheyenne - 45 Miles --- BNSF Colorado Division – Front Range Subdivision

This segment from BNSF MP74.4 at Fort Collins to MP119.4 at Cheyenne has 10.4 miles (23%) within three different segments of restrictive speed zones due to street running issues, curve restrictions, and yard limit rules. The number of miles with curves within this segment totals 8.33 miles and this mileage is contained in 27 curves, of which 14 of these are sharper than two degrees which will restrict standard railroad passenger equipment to less than maximum authorized speed. North American railroads define degree of curvature as a measure of the sharpness of a curve, the higher the degree of curvature the sharper the curve. As the radius (R) of the curve increases the degree (or sharpness) of the curve decreases.



There is an ascending grade northward from Fort Collins. Thirty miles of this grade is steeper than .5% and 15 miles of this grade exceeds 1.0%. There are four miles of descending grade northward into Cheyenne, three of which exceed 1.0%. Grades of this magnitude will not impact a light passenger train due to the light weight characteristics of the passenger cars and the high horsepower locomotives assigned to pull the train. Grades of 1.0% will have some effect on acceleration to maximum speed and may impact stopping distances for certain equipment. Grades of .5% and above can impede freight trains significantly if they are underpowered. A grade of 1.0% will usually cause a freight train to not attain its maximum authorized speed. There are no line side signals to govern train movements on this segment. Authority for train movement is in the form of Track Warrant Control issued by the BNSF Train Dispatcher at Fort Worth, Texas. These warrants are issued by radio and authorize a train to occupy a given mileage segment over segments of the subdivision which are identified as “blocks”. The BNSF presently averages three to four freight trains in each direction over this segment or an average of seven trains every 24 hours. Often, extra empty unit coal trains enroute back to the Powder River Basin traverse this segment as a short cut from the regular routing via Brush and Alliance. With an annual growth rate of 3% this number will increase to 9 to 10 trains in the next ten years assuming a steady 3% growth. Recent economic conditions regarding rail transportation may cause this annual growth rate to increase.

There are only four sidings along this 45 mile segment. Two of these are over 7,200 feet in length while the other two sidings are under 5,000 feet in length, making the options for the train dispatcher limited for the meeting of opposing freight trains in that most freight trains operated over this line are in excess of 5,000 feet in length.



BNSF Rail Line – Fort Collins to Cheyenne

The pictures that follow illustrate significant information that further defines some of the more challenging issues that will need to be overcome for the initiation of passenger service. Other pictures show areas for possible additional capacity (railroad tracks) and station locations.

The picture at the top of the following page shows the Fort Collins Intermodal Transportation Center. For purposes of cost estimation this Phase I study has assumed that the Center will be the starting point for passenger rail service between Fort Collins and Cheyenne. The actual Fort Collins station location will be addressed by the study now underway by CDOT on behalf of the Rocky Mountain Rail Authority. Our estimates will be adjusted once the Colorado work has been completed.

One unique challenge for the Fort Collins rail operation is the need to eliminate the long street-running alignment through the heart of the city. Upgrades to rail service for both passenger and freight operations will require consideration of new routes and station locations, possibly incorporating design features from the Mason Corridor study and other recent planning initiatives in the Fort Collins area.

The picture at the bottom of page 9 shows the present BNSF North Yard at Fort Collins. This is a very small facility with a limited capacity for holding freight cars for area industries as well as a gathering point for cars to be picked up or set out by through trains. A challenge to passenger train operations here is that the main track is occupied for an hour or more at times by through freight trains working at North Yard.

Fort Collins Intermodal Transportation Center
BNSF Track in the middle of Mason Street

BNSF North Yard at Fort Collins. Main Track to left of East Vine Drive. North Yard is located 2.1 miles north and east of the Intermodal Transportation Center.

The picture on this page and the top picture on the following page illustrate potential station sites for Wellington, Colorado, 10.8 miles north of Fort Collins. Wellington was formerly a station stop when passenger trains last operated on this line and there has been significant subdivision growth in this area during the past three decades. I-25 is approximately 1.5 miles to the east.

The bottom picture on page 11 and the top picture on page 12 illustrate the south end of the BNSF Cheyenne Freight Yard. The picture at the bottom of page 11 is the track junction of the city industry spur to the left while the track to the right is the main line south to Denver. The open area to the right of the main track to Denver would be an alternative site for further review as a commuter train storage and lay-over facility and quite possibly a site for parking for an adjacent passenger station. This same site was referred to within the Western Cheyenne Transportation Study prepared for the Cheyenne Metropolitan Planning Organization. The picture at the top of page 12 is the former Burlington Railroad Passenger Station now utilized by BNSF for their personnel assigned to the freight operations there.

The bottom picture on page 12 was taken from an overhead bridge of I-25 above the BNSF Cheyenne Freight Yard and clearly shows the congestion at the yard. Often, the main track is occupied for an extended period of time by freight trains. For the initiation of passenger train service northward to Casper, the BNSF will probably insist that a by-pass track be constructed for the use of any passenger train to get around their existing and future freight train operations at Cheyenne Yard.

Proposed Station Location Site for Wellington, Colorado.
East Side of Tracks viewing South.

Alternate Location for Wellington, Colorado station site.
East Side of Track viewing North.

South End of BNSF Cheyenne Freight Yard.
Potential passenger train storage location in center of picture.

BNSF Cheyenner Freight Yard. Building in foreground is former passenger station now utilized by BNSF Freight Personnel

BNSF Cheyenne Yard. Freight congestion issues are shown. May be necessary to construct by-pass track for passenger train use for service to Casper.

Cheyenne-Wendover-121.4 Miles--- BNSF Colorado Division – Front Range Subdivision

There are several operational and topographical issues within this segment that will be challenges to initiating passenger train service. The most prominent of these challenges is the number of curves (157) as well as the total mileage (37) of curvature. This mileage figure equates to 30.6% of the miles within this segment. Of these 157 curves, 102 of these possess a degree of curvature exceeding two degrees.

Numerous grades are also an issue on this segment, some of which are steep enough to affect the ability of a passenger train to attain maximum authorized speed. These grade restrictions are in concert with curve restrictions due to the topography of this territory.

A brief summation of these grades indicates that there are approximately 60 miles of grades in excess of .5%, 49 miles of grades in excess of 1.0%, and six miles of grades in excess of 1.5%. Five of these miles are on 1.5% grades that, in concert with curvature, will not allow for a 15,000 ton or heavier coal train to operate over this line without additional power or helper crews. Sidings are a constraint here also, in that they are relatively few and not very long, therefore the distance between these points for the meeting and passing of trains is extremely limited. There are nine sidings within this 121.4 mile segment, however, five of these are less than 5,000 feet in length, making the choices for the meeting of today's long trains very limited for the train dispatcher.

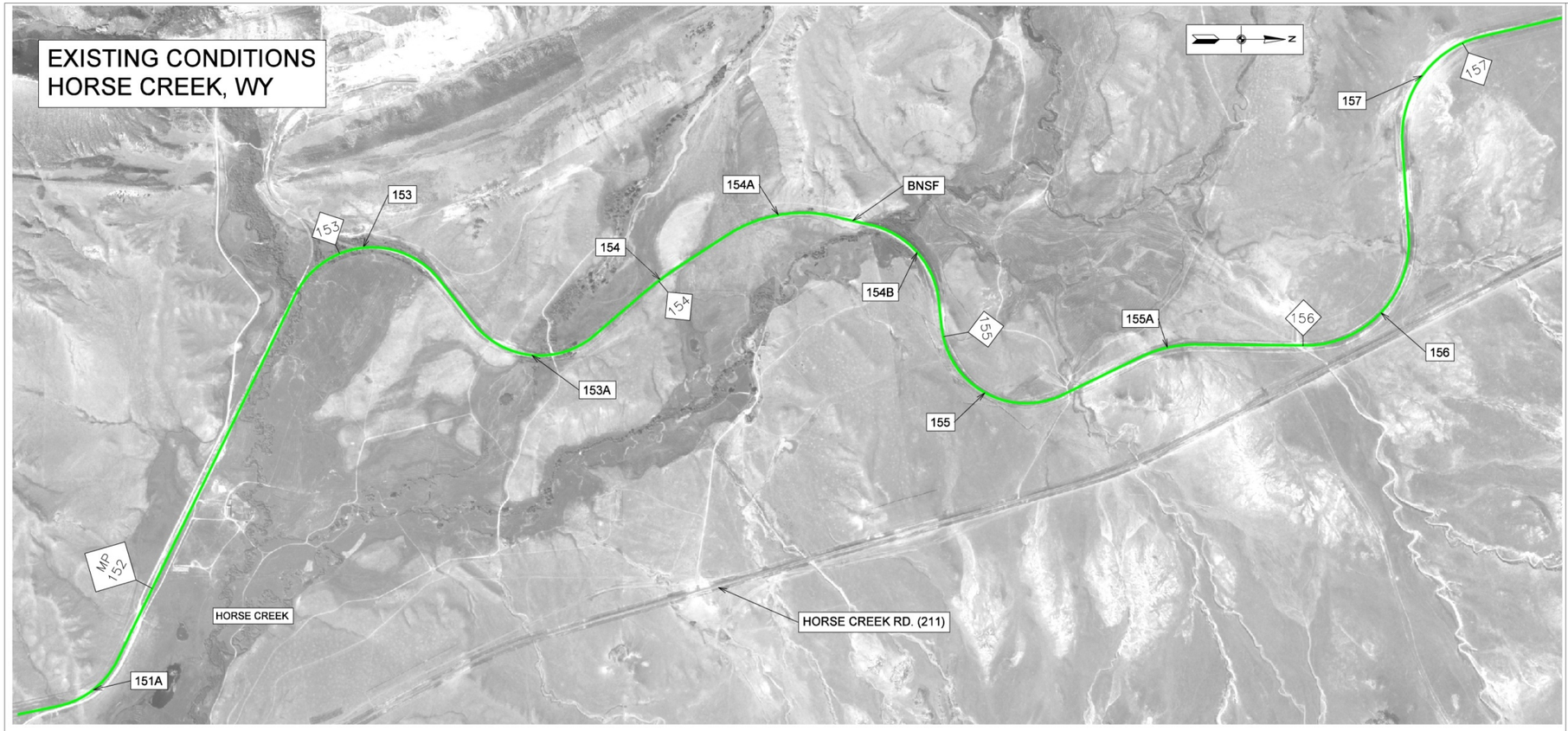
At this time it would appear that the 121.4 mile segment of the Front Range Subdivision between Cheyenne and Wendover poses major challenges to the introduction of passenger rail operations. Highway-competitive speeds north of Cheyenne would require an engineering analysis for entirely new alignments to bypass the extreme gradients and curvature areas of this segment.

The preliminary phase of the study did not involve discussions with military personnel at Warren Air Force Base. This military installation has imposed operating restrictions to BNSF freight trains and therefore, face to face discussions are in order during the next phase of the study to give the Air Force an opportunity to respond as to just what the actual restrictions might be for passenger train operation across the complex.

BNSF reports that this segment averages 10 freight trains per day over this line. With an annual growth rate of 3%, this number will increase to 13 to 14 trains annually in the next ten years.

On page 15 an exhibit displays existing curvature challenges in the Horse Creek vicinity.

BNSF Rail Line – Cheyenne to Wendover



0 750 1500 3000

EXSITING CURVE DATA

CURVE NUMBER	DEGREE OF CURVE	GRADE	CURVE COMPENSATED GRADE	LENGTH OF CURVE (ft)	LENGTH OF SPIRAL (ft)		EXISTING FREIGHT SPEED (MPH)
151A	5°6'	0.45	0.65	734	290	290	30
153	5°0'	0.78	0.98	2102	209	200	30
153A	5°0'	1.18	1.38	1539	299	299	30
154	1°0'	1.33	1.37	549	114	100	30
154A	3°5'	0.94	1.06	1089	394	391	30
154B	4°55'	1.5	1.70	1140	300	300	30
155	5°1'	0.8	1.00	1880	315	298	30
155A	3°11'	0.69	0.82	467	382	382	30
156	3°57'	0.95	1.11	2009	217	117	30
157	4°0'	0.95	1.11	1731	311	300	30

IF THIS DRAWING IS LESS THAN 22" X 34" IT IS A REDUCED SIZE DRAWING

G:\MN07 M0019\PLANNING\HORSE CREEK ALIGNMENT

CONSULTANTS:

TranSystems

222 South Riverside Plaza
Suite 2300
Chicago, Illinois 60606
312-869-8601
Fax 312-669-9606

WYOMING DOT

REVISIONS: MARK | DATE | DESCRIPTION

PROJ NO: MN070041
SCALE: 1"=1500'
DATE: 05/13/08
DESIGNED BY: TIM
DRAWN BY: CWH
CHECKED BY: TIM/DLH

SHEET TITLE:

EXHIBIT 001

EXISTING CONDITIONS
HORSE CREEK, WY

SHEET NO.

SHEET 1 OF 1

The picture on this page and the top picture on the following page supplement the Horse Creek Wyoming exhibit included in this report on page 15. The picture on this page illustrates one of the many wooden trestle bridges on this line that would need to be replaced in order to safely carry high speed passenger trains. The picture on the following page illustrates a five degree curve, one of nine restricting speed curves within this segment alone. As stated elsewhere in this report, the degree of horizontal curvature exceeding two degrees will restrict the speed of a passenger train to less than 75MPH. There are several segments similar to this one between Cheyenne and Casper where the development of higher speed operations (90MPH+) would require a complete re-alignment of the railroad.

Wood Piling Trestle over South Fork of Horse Creek.

Five Degree Curve on south side of Horse Creek

The picture at the top of the following page shows one of over 100 private crossings required to allow property owners access on either side of the BNSF right of way. Additional crossing protection will be required for each crossing along the route. There may be an opportunity to close a few of these, however, that process is sometimes just as costly as providing improved safety appliances in the form of additional crossing protection. In Phase 2 of the Study, the actual number of private railroad crossings and their future will be discussed with BNSF as BNSF has an active ongoing effort to close crossings. The actual number will be tabulated in each county, additional signage and safety precautions agreed upon, and this item will be one of the costing parameters in determining capital costs for upgrading for passenger service.

The picture at the bottom of the following page is the proposed site for a passenger station at Wheatland, Wyoming. It is possible that the former passenger station structure was located here. The site has the appropriate space for a building and a parking lot for patrons of the proposed service.

Typical Private Road Crossing found at numerous locations along proposed passenger train route allow access for ranchers to property.

Proposed Station Site for Wheatland, Wyoming.
Viewing south on west side of tracks at Oak St.

Wendover-Bridger Junction-29.9 Miles --- BNSF Powder River Division – Canyon Subdivision

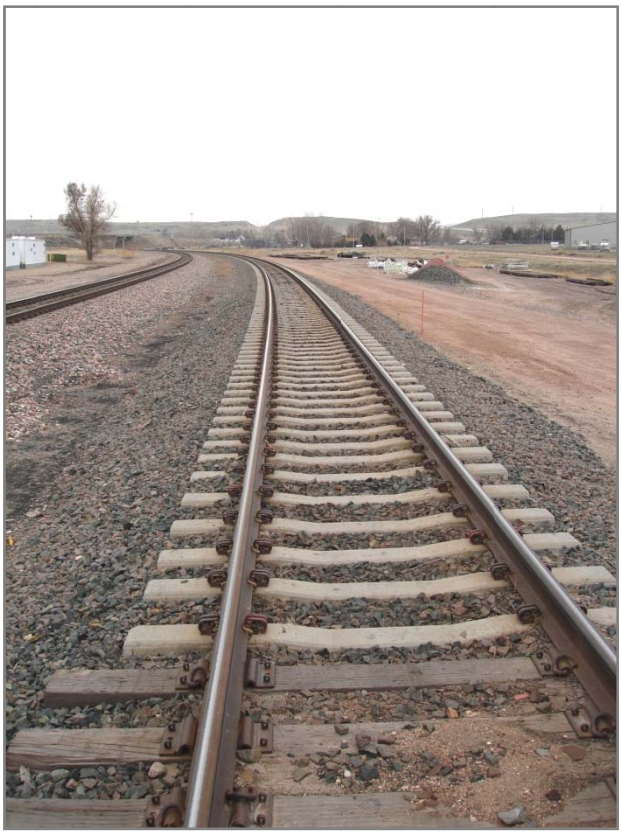
This short segment of the proposed passenger corridor is to be studied separately because of the vast differences of this Subdivision compared to the Front Range and Casper Subdivisions. The reason for this is the high number of loaded and empty coal trains that traverse this line which is located at the southern funnel point of the Powder River Division. This route is a primary outlet for loaded coal trains moving either to Alliance, Nebraska for furtherance eastward or directly through Denver via Northport and Brush, destined to several Texas utility power plants. This latter routing enables these heavy coal trains to bypass the Front Range Subdivision's grades and extreme curvature described earlier in this report. The Canyon Subdivision has heavily ballasted main lines and sidings with new rail, concrete ties, and a Centralized Traffic Control System which allows for a high number of heavy tonnage trains to move quickly and efficiently over this line. There is a 3.9 mile and a 4.3 mile segment of two main tracks, and one 7,000' siding, which together, equates to a total of 9.6 miles or 32% of the route having two or more tracks. As the volume of traffic grows, additional second main track will be installed where conditions will allow. One of the locations where conditions may not allow the installation of a second main track is from Wendover MP103.3 to East Cassa MP 107.8. The railroad at this point is in the confines of a deep canyon with no additional room on the rock face wall for more than the single track that is there now.

BNSF Rail Line – Wendover to Bridger Junction

BNSF reports that this 29.9 mile segment is averaging 44 trains per day at the present time. Within the next ten years this number is expected to grow to approximately 75 trains per day due to the increasing demand for coal.

With the capacity improvements now underway at Bridger Junction allowing for multiple main line movements to and from the Orin Subdivision serving the Powder River Basin Coal Fields, it is likely to assume that further capital projects enabling further capacity improvements east of Bridger Junction where the topography will allow, will be constructed. It may be possible to double track most of this 29.9 mile segment. It should be noted, however, that even with the additional capacity, blending higher speed passenger trains with coal trains operating in the 30-50MPH speed range will be a very difficult challenge.

The picture to the right illustrates a "heavy-haul" track structure segment. Note concrete ties, heavy ballast, and hardened curve rail. This location, Glendo, Wyoming, is located on a two main track section of the Canyon Subdivision between Wendover and Bridger Junction near Orin. This line now handles an average of 44 coal trains daily with this number projected to increase substantially over this and the next decade. The BNSF will add a second main along this route where topography permits.



Glendo, Wyoming on BNSF Canyon Subdivision Heavy Duty Two Main Track Segment supporting 44 coal trains every 24 hours.

Bridger Junction – Casper – 69.0 Miles --- BNSF Colorado Division – Casper Subdivision

This segment is very well engineered. There are 35 curves totaling 21.3 miles or 61% of the distance, however, only one of these curves exceeds two degrees so there are no speed restrictions due to curvature. The vast majority of these curves are of one degree or less which explains the high mileage of curves on account of the low curvature degree in the design of this line. There is a 25.5 mile restricted speed area (30MPH) between MP171.0 and MP196.5 and this is due to rail conditions. This area has 112lb rail that was laid in 1954. This is very light rail and very old rail by today's standards. There is a plan to relay this segment with heavier rail in the near future.

The topography of the land over which this segment was built is mild in comparison to the Cheyenne-Wendover segment. The line was engineered to traverse the valley of the North Platte River. Grades do not exceed .30%, and this is westward only.

BNSF Rail Line – Bridger Junction to Casper

There are only four sidings on this 69 mile segment between Bridger Junction and Casper and three of these exceed 5,490 feet in length. BNSF reports that there is an average of eight trains per day over this segment of line. Even with this low number of trains, the distances between the three usable sidings, 23 miles, makes this segment of line unable to measurably increase the volume of trains (four each way). Train delays are significant because of the siding spacing on this segment.

The picture below shows Douglas, Wyoming. The old passenger station has been sold and is occupied by another business. Space at the east end of the former station does exist that may be suitable for a new passenger station and a parking lot.

Douglas, Wyoming viewing to the North from west side at Center Street.
Old Passenger Station in distance.

Open area on East Side of main track from former station site at Douglas.

The two pictures on page 24 illustrate a potential suburban station location for Casper, Wyoming. This is the community of Evansville where appropriate space exists for a station structure and parking lot.

Potential Station Site at Evansville,Wyoming. Curtis Street crossing is possible suburban station location for east side of Casper.
Located 2.8 miles from downtown station.

Evansville at Curtis Street – Looking West at potential suburban station stop for Casper.

The picture below shows the City side of the old Burlington Station in downtown Casper. Now utilized by BNSF, it is ideally located to the central business district of Casper.

The freight yard at Casper is a small, crowded facility having three long yard tracks and five shorter through tracks for the switching of the through trains and handling the traffic for local industries, of which there are quite a few. The main track is often used to store freight trains for an extended period of time. The General Office Building which contained the passenger station is still in place. The station platform and parking spaces for potential passenger train patrons is available. In addition, and most importantly, there appears to be land available on BNSF property to support a proposed passenger train lay-over facility on the east end. Further study and discussions with the BNSF will be required to develop an operating plan enabling passenger service to Casper. These discussions will include BNSF's future growth plans to handle an increasing amount of business serving new customers, congestion and main line track issues here, as well as the required passenger related facility to handle both a start-up service and a phased growth passenger service.

The two pictures on page 27 illustrate the east end land and track space possibly available for a new commuter station and/or commuter train storage or layover facility for the passenger train equipment.

BNSF Administration Building at Casper. This structure was formerly utilized as station for Casper. Downtown District is one block south.

Station Track Side at Casper. Station Platform area in foreground.

Track Side at Casper Station. Freight Train parked on main track to left. Open area in distance on right is potential passenger train storage location.

Detail view of east end of Casper Station for potential passenger train storage and platform site. Turn-a-round services could be performed to passenger train equipment in this area.

Alternative passenger train storage site at far east end of Casper station.

Fort Collins – Cheyenne Speed Assessment

Designation of a passenger rail corridor as one of the nation's "High Speed" rail corridors requires consideration of "Whether the proposed corridor includes rail lines where railroad speeds of 90MPH or more per hour are occurring or can reasonably be expected to occur in the future." We have, in this scoping study, addressed this issue for what would likely be the initial service segment of passenger rail extension into Wyoming from the south, from Fort Collins into Cheyenne.

Since this alignment is non-signaled, the maximum authorized speed a passenger train can operate under Federal Railroad Administration rules is 59MPH. Once a signal system is installed, crossing circuits are lengthened to protect highway crossings from higher speed trains, and track and roadbed improvements are completed, including super elevation of curves, then passenger train speeds can be increased.

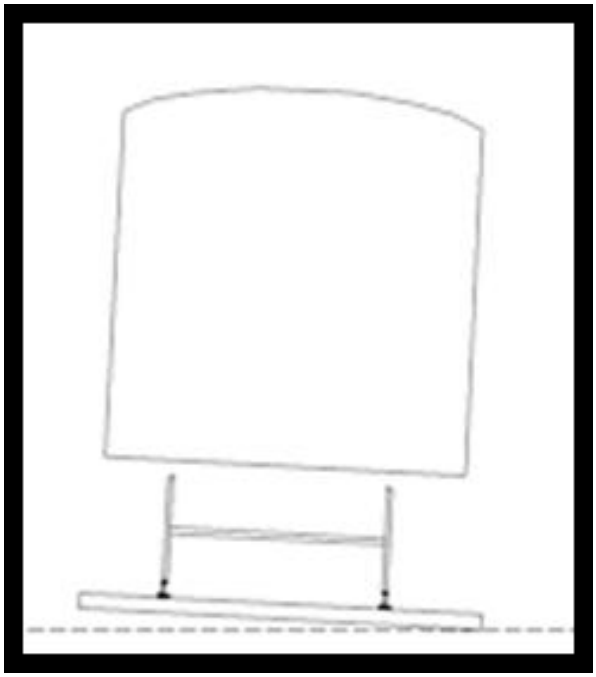
A brief analysis of the BNSF track charts indicates that of the 45 miles of alignment between Fort Collins and Cheyenne, 8.33 miles or 18.5% of the distance is curvature. There are 27 curves on this segment, of which 14 are of two degrees or greater. A two degree curve, without substantial super elevation of the outside rail, will restrict a trains' speed to less than the maximum authorized by other conditions.

In summary, approximately 20% of the existing Fort Collins- Cheyenne railway alignment would be capable of supporting 90 MPH speeds even after significant track and signaling upgrades.

A joint engineering analysis with the BNSF will have to be conducted to determine final passenger train speeds for all rail mileage over this segment. The BNSF assesses main line track conditions through the use of a track geometry car and the data received from this analysis will have to be reviewed by the BNSF Engineering Department. Further field surveys must be conducted to determine remedial applications for speed increases.

Super-elevation: In rounding a curve, a train is subject to a force acting radially outward. To counteract that radial force the outside rail of the curve is raised (or "super-elevated") a distance of "X" inches above the inside rail. This height in inches varies upon the curve and speed of the train and is measured as the height of superelevation.

In the figure below the right, (outside) rail is super-elevated as the train curves to the right while moving forward into the page.



Following is a brief review of the alignment between Fort Collins and Cheyenne. The first tangent (straight) segment of this proposed corridor where speed increases might be realized is a short distance between Fort Collins and North Yard and the first proposed station stop at Wellington. Northward trains would be accelerating from a 40MPH restriction due to the six degree curve at MP78.4 onto straight track that extends to the two degree curve at MP84.7. The station stop at Wellington would be in the vicinity of MP85.2. Even though this is a six plus mile tangent, the highest speed to be attained in either direction would be a topping out of 75MPH before immediately having to set the brakes for the station stop at Wellington for northward trains and the six degree curve at MP78.4 for southward trains.

Northward trains departing Wellington MP85.2 will encounter a two degree eleven minute curve at MP87.2 which will not impede their acceleration to maximum speed, in that at 2.5 miles north and from the station at Wellington and ascending a nearly 1.0% grade, the best speed attainable at this point would be approximately 50-55MPH.

Because of the varying segments of an ascending grade all the way to MP110, it is unlikely that a maximum authorized speed of 79MPH would not be attained with conventional equipment until approximately MP98, which is 12.8 miles from the station stop at Wellington. This top speed of 79MPH could be maintained until MP105, a distance of seven miles, when braking would need to occur to safely negotiate three curves greater than two degrees at a speed of 65MPH. A maximum speed of 70MPH could possibly be re-attained at MP109 before brakes would again need to be applied for the six degree curve located at MP110.1 to 110.7 at a safe speed of 40MPH. A speed of 70MPH could be attained at MP116 before a final brake application to arrive at Cheyenne at MP119.4.

Because of curvature and grade challenges, and in reply to a location where speeds of 90MPH could be attained, our estimate that 90MPH may be attained between MP102 and MP103.5 where the 1% ascending grade flattens out to nearly level. At MP103.5, brakes must be applied for the three, two plus degree degree curves beginning at MP105.7. Total distance for 90MPH speeds would be 1.5 miles.

Southward trains departing Cheyenne MP119.4 could possibly attain a speed of 65MPH at MP113 due to a operating on mostly a continuous ascending 1.0% grade since departing. The grade changes from ascending to descending at Speer, MP112.4 and at this point it is necessary to apply the brakes in order to safely negotiate the six degree curve at MP110.7 at 40MPH. Once through this restrictive curve, the train can accelerate to 65MPH at MP108 and hold at that speed while traversing through the three curves in excess of two degrees through MP105. Maximum speed is quickly attained at MP103 due to the descending grade and is maintained on the long downhill alignment for approximately 15 miles until brakes must be applied near MP88 for the Wellington station stop at MP85.2.

Departing Wellington, a maximum speed of 75MPH can be attained until braking must take place for the two six degree curves located between MP78.5 and MP77. A quick acceleration to 50MPH briefly will take place before the final brake application is made for the station stop at Fort Collins.

A speed of 90MPH could possibly be attained at MP101 and be maintained to MP90 – a distance of 11 miles. Note the time saved at 90MPH vs 79MPH for 11 miles is 55 seconds – not worth the extra signaling and rail infrastructure costs between these two maximum speeds.

The above estimated schedule and running times were made with an MP36 Diesel Locomotive and five Bombardier Bi-Level Commuter cars – the most common type of equipment employed in commuter train operations in the United States. The weight of this train was 273 tons. If the same locomotive were utilized to pull intercity passenger cars,

and in this case the California Car would be utilized as it has nicer amenities on board tailored to longer haul patrons, then the weight of this train would be 355 tons. This additional weight would equate to a schedule approximately four minutes longer northward and maybe one minute longer southward, primarily due to the number of ascending miles (32) in the northward direction. Another set of equipment evaluated was the Talgo Train which is a tilt train enabling it to negotiate most curves at speeds of 5-8MPH greater than convention equipment as described above. The weight of this train is 284 tons. All of the train consists as described are bi-directional in that there is a locomotive for traction on one end and a cab car on the other end. The cab car is either a passenger car or a locomotive shell with a control compartment for the engineer to operate the train. The bi-directional feature saves the time and associated costs of turning the equipment at the end of each run. The grade is primarily 1% or greater, and while it does not impede a short passenger train from attaining the maximum speed, it takes a greater distance to do so.

Bombardier bi-level commuter coaches in Toronto, Canada

The picture at the top of the following page illustrates the Talgo Tilt Train in Amtrak service between Portland, Oregon and Seattle, Washington.

The picture at the bottom of the following page illustrates an Amtrak F59PH Diesel Locomotive at the head of a five car California Car consists in Amtrak service between San Jose and Sacramento, California.


Amtrak California
2013

Train Schedules

Train Schedules are composed of three primary components. These are:

- Pure Running Time which is defined as the actual time it takes a train to traverse a route from Point A to Point B without any delay
- Dwell Time which is time built into the schedule allowing for a station stop to load and unload passengers
- Recovery Time which is usually a percentage of time above the Pure Running Time and Dwell Time to allow for unforeseen delays such as slow orders due to track conditions, signal failures, delays caused by freight trains, and other incidents

We utilized three passenger train consists to construct proposed schedules that are based on experienced evaluation of acceleration and braking characteristics of the equipment.

Historically, railroads operating passenger service published internal passenger train consist books. The purpose of the consist book was for the instruction of all supervision involved with the make-up or line-up of passenger cars in a train. The definition of consist, therefore, is the written description of how a passenger train should appear, for example, at a departing station. Example would be: Locomotive, Mail Car, Baggage Car, 3 Coach Cars, Dining Car, 3 Pullman or Sleeping Cars, Observation-Lounge car. This example shows the train front to back.

Often, cars would be added and subtracted and the consist sheet describing this particular train would indicate the appearance (line-up) of the train at certain intermediate terminals. The consist book might also show the origin and destination of each car in the train as they were often different with mail cars and sleeping cars being set off or picked up enroute.

Description of Train Consists

1966 – Chicago, Burlington & Quincy E7 2,000HP Diesel Locomotive – 2 Storage Mail Cars – 1 Railway Post Office Mail Car- 1 Coach – Weight of Train 280 Tons

A – Motive Power Industries MP36 3,600HP Diesel Locomotive – 5 Bombardier BiLevel Coaches – 273 Tons

B – EMD F59PH 3,000HP Diesel Locomotive – 5 MK California Cars – 365 Tons

C – EMD F59PH 3,000HP Diesel Locomotive – Talgo Train 12 Units – Cab Car – 284 Tons

Schedule

North						South			
1966	C	B	A			A	B	C	1966
1108p	650a	650a	650a	0	Fort Collins	607p	609p	602p	523a
1123p	702a	704a	704a	10.8	Wellington	548p	547p	545p	454a
1206a	740a	745a	743a	45.0	Cheyenne	515p	515p	515p	415a
	58”	50”	55”	53”		52”	54”	47”	1’08”

In 1966, the maximum passenger train speed on the CB&Q line was 55MPH. Schedules A, B, and C are based on a maximum speed of 79MPH

Preliminary Cost Analysis

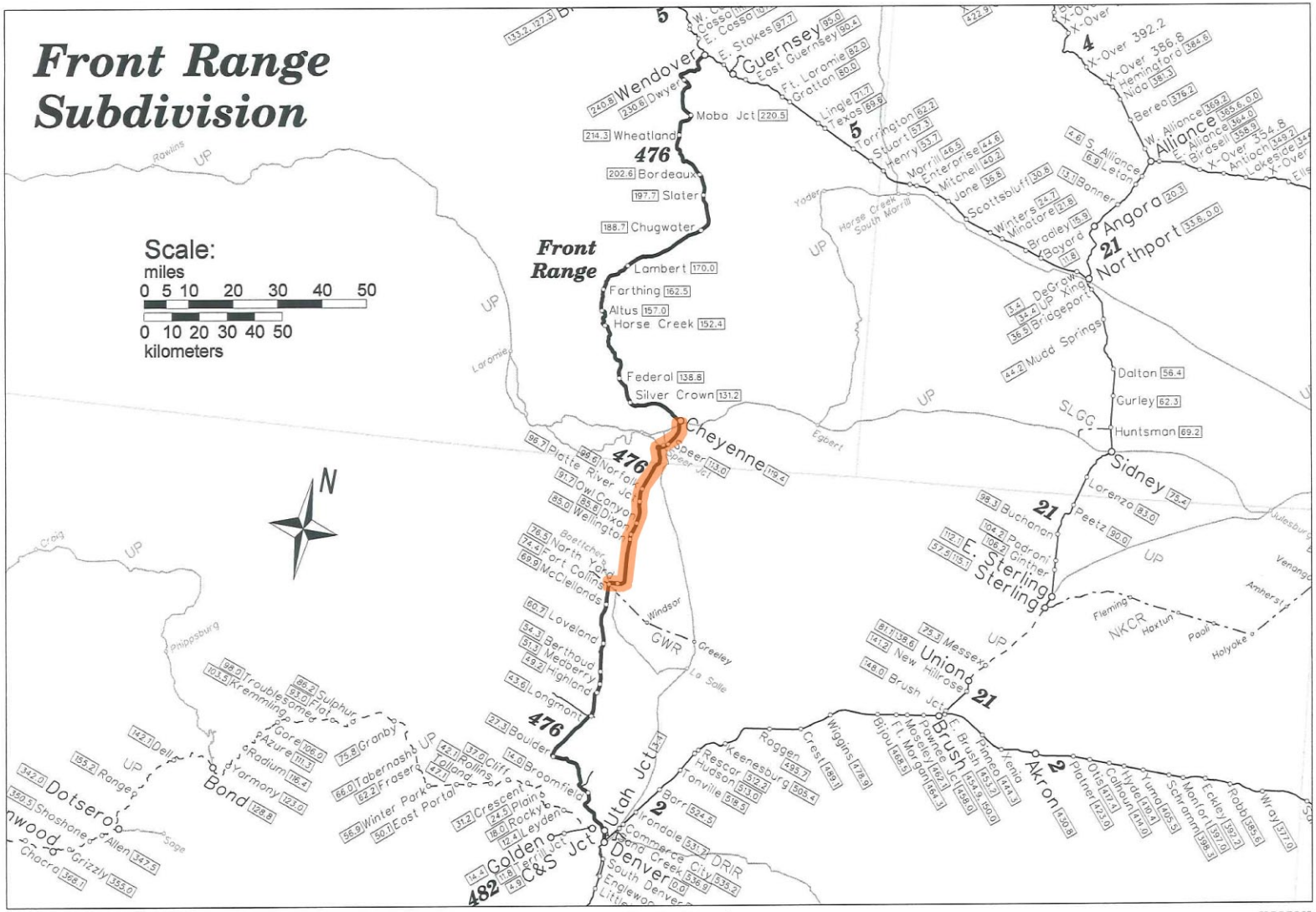
Our initial analysis of the Fort Collins to Cheyenne Corridor indicates that minimum upgrades to the railroad infrastructure to achieve standard (79 MPH) service would be in the $1.0 - $1.5 million/mile range.

Next Steps

In May 2008 the Rocky Mountain Rail Authority, in collaboration with Colorado DOT, provided Notice to Proceed to a consulting team for a study of proposed intercity passenger rail services for both the Front Range and I-70 Corridors in that state. The consulting team is just initiating their work, so it is likely to be a few months before even tentative judgments have been made about appropriate service speeds, track standards and service frequencies. The combinations of speed, passenger comfort and frequency of service will in turn drive projections of ridership not only for Colorado but, through extrapolation, to service points in Wyoming as well.

The Wyoming study team has tried in all circumstances to be a good steward of the state’s investment in this study effort and, for this reason, has held back on those elements that would later need to be reconciled with the Colorado approach. We look forward through the balance of 2008 and early 2009 to completing the scope of work as described in our original contract with WYDOT.

Appendix A



BNSF Railway Company

...\tcm-FrontRange.dgn

11/02/2001

TRACK CHART ABBREVIATION LEGEND

BRIDGES & CULVERTS

A	ARCH
AB	ABUTMENT
AP	APPROACH
AR	ARCH
ARM TL	ARMCO TUNNEL LINER
B	BOX
BASC	BASCULE
BD	BALLAST DECK
BDPT	BALLAST DECK PILE TRESTLE - WOOD
BR	BRIDGE
BRK	BRICK
BX	BOX
C	CONCRETE
CA	CONCRETE ARCH
CB	CONCRETE BOX
CBG	CONCRETE BOX GIRDER
CCTS	COMBINATION CONCRETE & TIMBER SLAB
CG	CONCRETE "I" GIRDER
CIP	CAST IRON PIPE
CMA	CURRUGATED METAL ARCH
CMP	CORRUGATED METAL PIPE
CTG	CONCRETE "T" GIRDER
CP	CONCRETE PIPE
CUL	CULVERT
DBL	DOUBLE
DG	DECK GIRDER
DPG	DECK PLATE GIRDER
DPLG	DECK PLATE LATTICE GIRDER
DPCT	DECK PIN CONNECTED TRUSS
DR SP	DRAW SPAN
DRT	DECK RIVETED TRUSS
DS	SWING SPAN
DT	DECK TRUSS
EXT	EXTENSION
FT	FRAME TRESTLE - WOOD
FTG	FOOTING
GCIP	GALVANIZED CORRUGATED IRON PIPE
GIP	GALVANIZED IRON PIPE
IB	"I" BEAM OR GIRDER BEAM SPAN
I BM	"I" BEAM
LG	LONG
LS	LIFT SPAN
MPP	MULTI-PLATE PIPE
MSY	MASONRY
O	OVAL
OCP	OVAL CONCRETE PIPE
OD	OPEN DECK
OMP	OVAL METAL PIPE
ORCP	OVAL REINFORCED CONCRETE PIPE
PC	PRE-STRESSED CONCRETE
PCMP	PERFORATED CORRUGATED CONCRETE PIPE
PED	PEDESTAL
PRT	PONY RIVETED TRUSS
PT	PILE TRESTLE - WOOD
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCT	REINFORCED CONCRETE TRESTLE
RD WD	REDWOOD
RSB	REINFORCED STONE BOX
RTB	RAIL TRACK BOX
RTCB	RAIL TOP CONCRETE BOX
RTSB	RAIL TOP STONE BOX
SA	STEEL ARCH
SBG	STEEL BOX GIRDER
SP	STEEL PIPE
SPP	STEEL PLATE PIPE
SSC	STEEL STRINGERS & CAPS
SSP	STUCTURAL STEEL PIPE
STA	STONE ARCH
STB	STONE BOX
STO	STONE
T	TILE
TBX	TIMBER BOX
TDBX	THRU VOID, DBL. CELL PRES. CONC. BEAM OR GIRDER
TL	TUNNEL LINER
THG	THRU GIRDER
THT	THRU TIMBER TRUSS
TPLG	THRU PLATE LATTICE GIRDER
TP	TILE PIPE
TPCT	THRU PIN CONNECTED TRUSS
TPG	THRU PLATE GIRDER
TR	TREATED
TR	T-RAIL
TPL	TRIPLE
TRT	THRU RIVETED TRUSS
TSBX	THRU VOIDED-SINGLE CELL PRESTRESSED CONCRETE BEAM OR GIRDER
VIT P	VITRIFIED PIPE
VP	VITRIFIED PIPE
VTEE	VOIDED PRESTRESSED CONC. TEE GIRDER
VTP	VITRIFIED TILE PIPE
WB	WOOD BOX
WD	WOOD
WF	WIDE FLANGE BEAM SPAN
WP	WOOD PIPE
WR I P	WROUGHT IRON PIPE

TRACK & SIGNAL

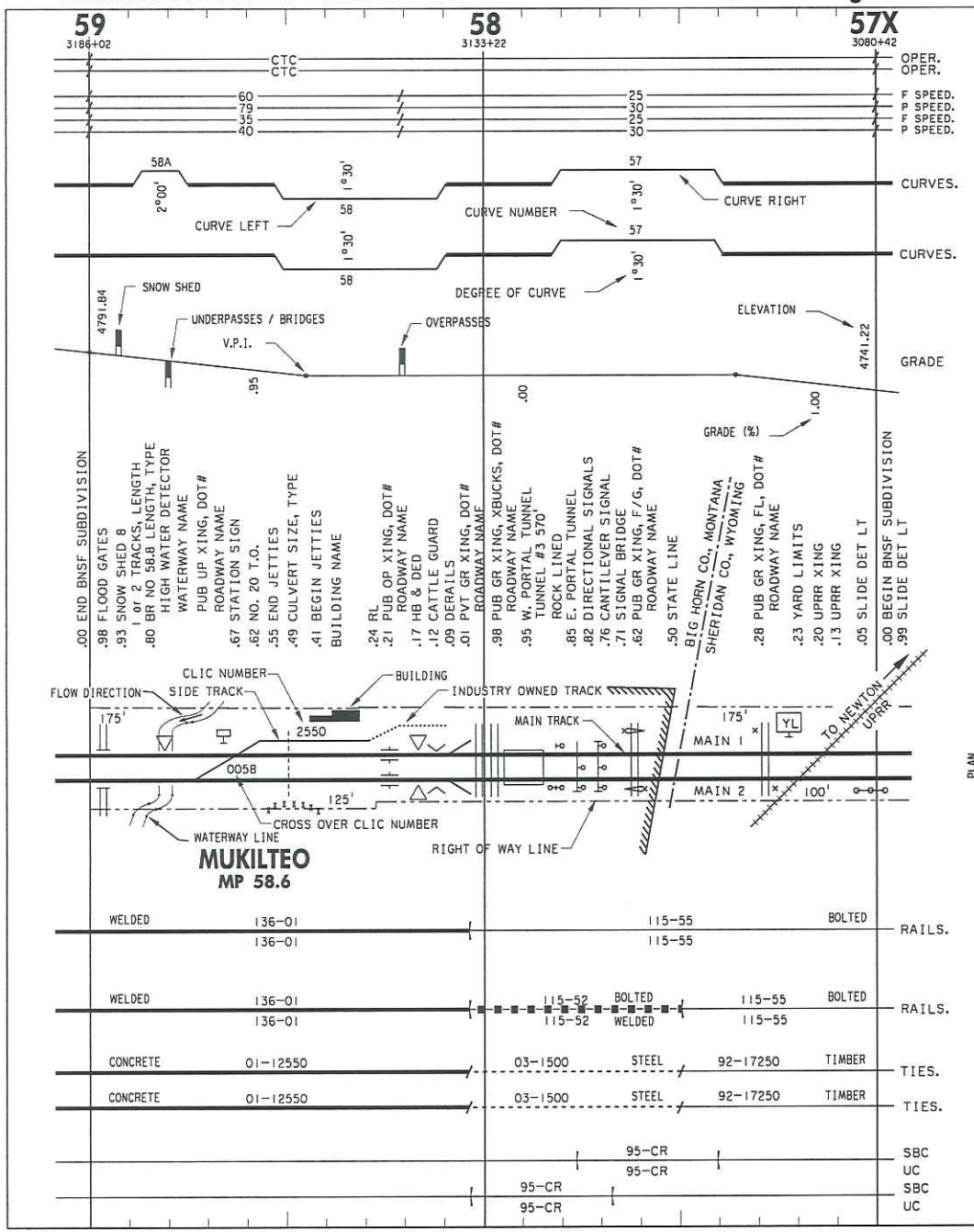
ABS	AUTOMATIC BLOCK SIGNAL SYSTEM
ABD	ACOUSTIC BEARING DETECTOR
AEI	AUTOMATIC EQUIPEMENT IDENIFICATION READER
ATS	AUTOMATIC TRAIN STOPS
BFD	BROKEN FLANGE DETECTOR
BR SIG	BRIDGE SIGNAL
CANT SIG	CANTILEVER SIGNAL
CTC	CENTRALIZED TRAFFIC CONTROL
DED	DRAGGING EQUIPMENT DETECTOR
DESLTD	DRAGGING EQUIP. & SHIFTED LOAD W/TOP DETECTOR
F	FREIGHT (SPEED)
F/G	FLASHING SIGNAL WITH AUTOMATIC GATES
FL	FLASHING SIGNAL
HB & DED	HOT BEARING & DRAGGING EQUIP. DETECTOR
HWD	HIGH WATER DETECTOR
INTLK	INTERLOCKING
I TOWER	INTERLOCKING TOWER
LS	LINE SEGMENT
MP	MILEPOST
NO.	NUMBER
OCS	OCCUPANCY CONTROL SYSTEM
OH	OVERHEAD
OOS	OUT OF SERVICE
P	PASSENGER (SPEED)
RES LIM	RESTRICTED LIMITS
RL	RAIL LUBRICATOR
SIGS	SIGNALS
SBC	SHOULDER BALLAST CLEANING
SLD	SHIFTED LOAD DETECTOR
SLTD	SHIFTED LOAD WITH TOP DETECTOR
S SW	SPRING SWITCH
T.O.	TURNOUT
TRK	TRACK
TWC	TRACK WARRANT CONTROL
UC	UNDERCUT
WID	WHEEL IMPACT DETECTOR
YL	YARD LIMIT

MISCELLANEOUS

AVE	AVENUE
BLVD	BOULEVARD
CO	COUNTY
CONN	CONNECTION
CONST	CONSTRUCTED
CR	CREEK OR CRUSHED ROCK
DBL	DOUBLE
DIV	DIVISION
DR	DRIVE
E	EAST
EL	ELEVATION
F LT P	FLOOD LIGHT POLE
F LT T	FLOOD LIGHT TOWER
FRT	FREIGHT
GR	AT GRADE
HO	HOUSE
HWY	HIGHWAY
IND	INDUSTRY
JCT	JUNCTION
JT	JOINT
LT	LEFT
MAX	MAXIMUM
MTCE	MAINTENANCE
NO	NORTH
OH	OVERHEAD
OP	OVERPASS
PED	PEDESTRIAN
PK	PARKWAY
PO	POWER
PSGR	PASSENGER
PUB	PUBLIC
PVT	PRIVATE
RD	ROAD
RESERV	RESERVOIR
RIV	RIVER
RR	RAILROAD
RT	RIGHT
RW	RIGHT-OF-WAY
RY	RAILWAY
SEC	SECTION
SO	SOUTH
ST	STREET
STA	STATION
SUB	SUBDIVISION
TPL	TRIPLE
UP	UNDERPASS
W	WEST
YD	YARD
XBUCKS	CROSSBUCKS
XING	CROSSING

Timetable Subdivision Terminus West ← | Line Segment Number | → Timetable Subdivision Terminus East

Subdivision Sheet Number 1



MILEPOST NUMBER
SURVEY STATION
METHOD OF OPERATION
MAIN 1 OR 3 SPEEDS
MAIN 2 OR 4 SPEEDS
CURVE RIGHT
MAIN 1 OR 3 TANGENT
CURVE LEFT
CURVE RIGHT
MAIN 2 OR 4 TANGENT
CURVE LEFT
ELEVATION
GRADE LINE
GRADE

PLAN VIEW MILEPOST AND FEATURE DESCRIPTION
FOREIGN LINE
RIGHT-OF-WAY LINE
RIGHT-OF-WAY DIMENSION
MAIN 1
MAIN 2
RIGHT-OF-WAY DIMENSION
RIGHT-OF-WAY LINE
STATION NAME
STATION MILEPOST

PLAN

WEIGHT - YEAR
MAIN 1 OR 3 - RAIL TYPE
WEIGHT - YEAR
WEIGHT - YEAR
MAIN 2 OR 4 - RAIL TYPE
WEIGHT - YEAR
MAIN 1 OR 3 - YEAR-NUMBER INSTALLED
MAIN 2 OR 4 - YEAR-NUMBER INSTALLED
SHOULDER BALLAST CLEANING YEAR
MAIN 1 OR 3
UNDERCUT YEAR
SHOULDER BALLAST CLEANING YEAR
MAIN 2 OR 4
UNDERCUT YEAR

TRACK CHART FEATURE LEGEND

NOTES

TRACK NUMBERS MAY NOT BE AVAILABLE FOR ALL TRACKS
TRACK NUMBERS MARKED WITH AN * ARE UNKNOWN

BRIDGES
THE MILEPOST LOCATION OF A BRIDGE IS THE LOW MILEPOST END OF THE BRIDGE.

GRADE
GRADE IS SHOWN PERIODICALLY WHERE THE GRADE CHANGES ARE TOO NUMEROUS OVER SHORT DISTANCES TO CLEARLY SHOW.

MILEPOST
SIGNIFICANTLY LONG OR SHORT MILES ARE NOTED WITH THEIR RESPECTIVE EQUATIONS. ALPHA CHARACTER MILEPOST INDICATE DUPLICATION OF NUMBERS WITHIN A SUB OR MAIN 1 HAS DIFFERENT ALIGNMENT THAN MAIN 2.

TRACK
MAIN LINES ARE SHOWN WITH A BOLD LINE.

RAIL
WELDED RAIL IS SHOWN WITH A BOLD LINE. BOLTED RAIL IS SHOWN WITH A THIN LINE.

TIES
CONCRETE TIES ARE SHOWN WITH A BOLD LINE. TIMBER TIES ARE SHOWN WITH A THIN LINE.

SCALE
HORIZONTAL: 2"=1 MILE (1 MILE MAY NOT EQUAL 5280') VERTICAL: NONE

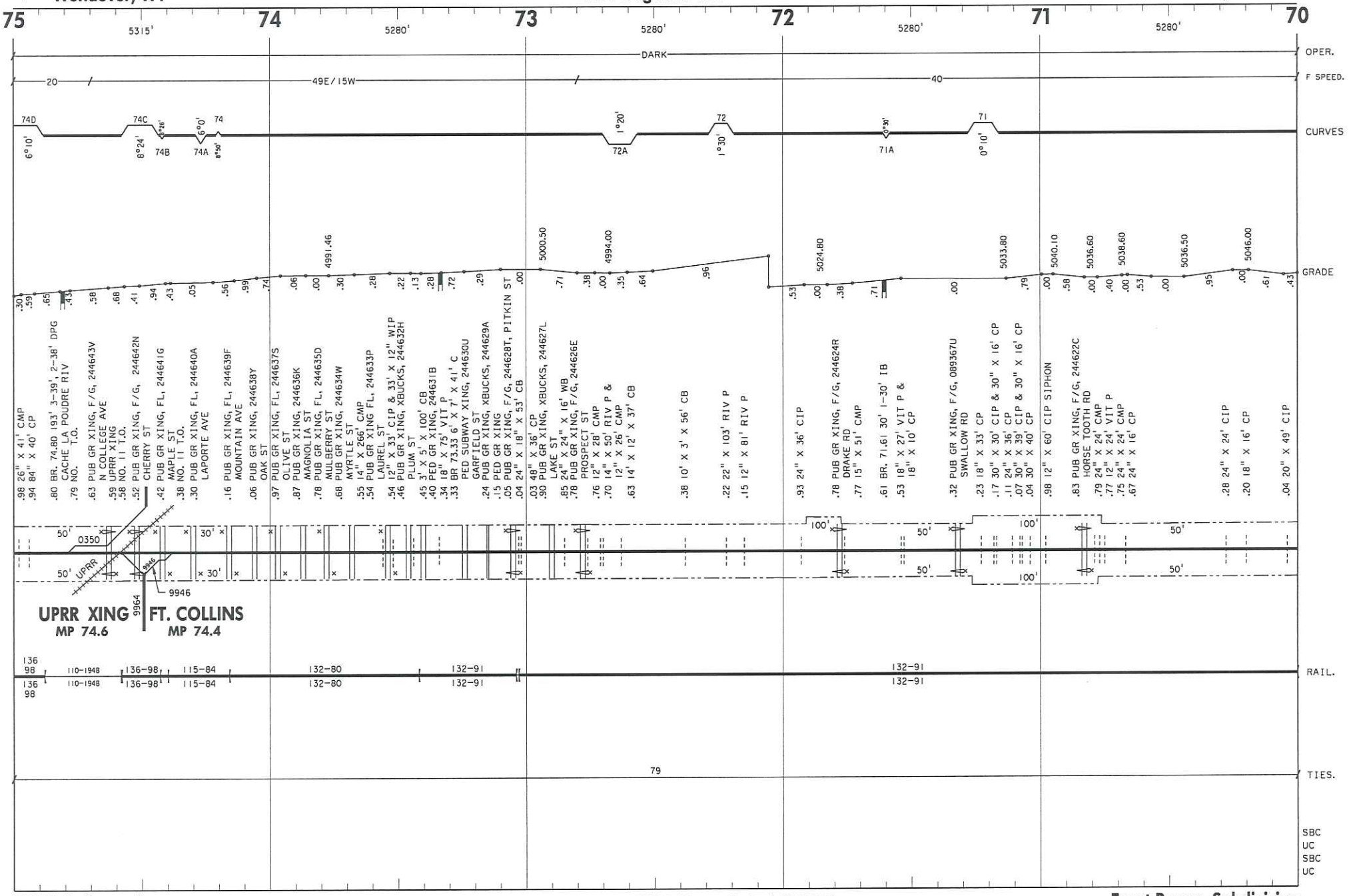
SYMBOLS

- RAIL LUBRICATOR
- SIGNALS:
  - BRIDGE — SINGLE DIRECTIONAL
  - CANTILEVER — BI-DIRECTIONAL
- ROAD CROSSINGS:
- 026007F — D.O.T. NUMBER, AS SHOWN ON PUBLIC AND PRIVATE CROSSINGS
- ROAD CROSSING WARNING DEVICE, FLASHING SIGNALS WITH AUTOMATIC GATES
- ROAD CROSSING WARNING DEVICE, FLASHING SIGNALS
- SLIDE DETECTOR FENCE
- DETECTORS:
  - ABD - ACOUSTIC BEARING DETECTOR
  - AEI - AUTOMATIC EQUIPMENT IDENTIFICATION READER
  - BFD - BROKEN FLANGE DETECTOR
  - SLD - SHIFTED LOAD DETECTOR
  - SLTD - SHIFTED LOAD WITH TOP DETECTOR
  - HB & DED - HOT BEARING & DRAGGING EQUIPMENT DETECTOR
  - HWD - HIGH WATER DETECTOR
  - WID - WHEEL IMPACT DETECTOR
- STATION SIGN
- YL — YARD LIMIT SIGN
- CATTLE GUARD
- CULVERT
- TUNNEL OR SNOW SHED
- JETTIES
- FLOOD GATE
- DERAIL
- CITY LIMITS
- RIGHT OF WAY LINE *

* RIGHT OF WAY OWNERSHIP DIMENSIONS SHOWN MAY BE APPROXIMATE OR OUT OF DATE. FOR MORE ACCURATE INFORMATION ACCESS THE MAPS AND RECORDS WEBSITE FOR STATION AND RIGHT OF WAY MAPS OR CALL THE BARTLETT AND WEST COMPANY AT 785-435-4607

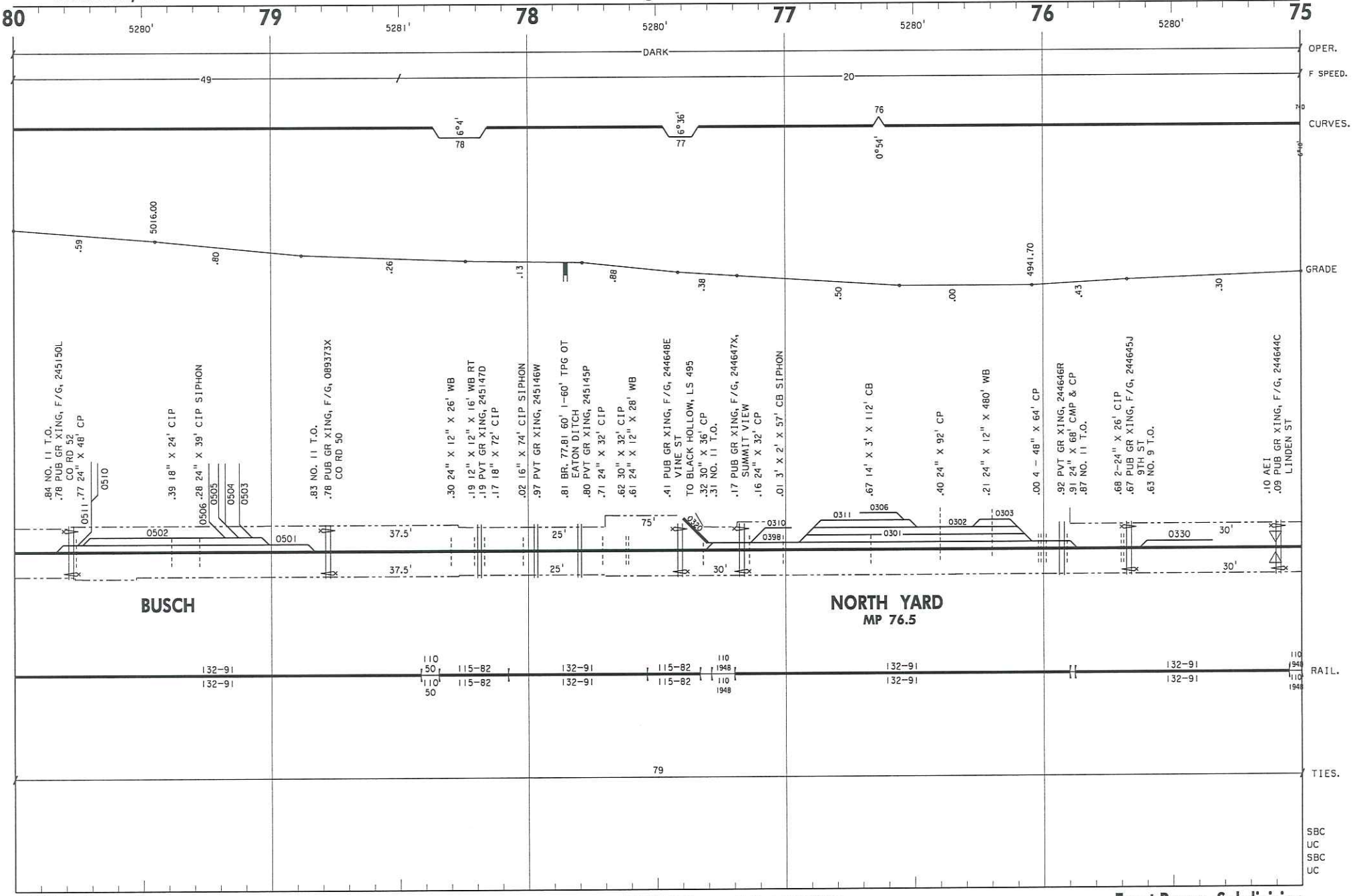
Burlington Northern and Santa Fe Railway Company | Drawing Filename | Revised: 03/03/2003 | Subdivision Name

← Wendover, WY — Line Segment 476 — Denver UD, CO →



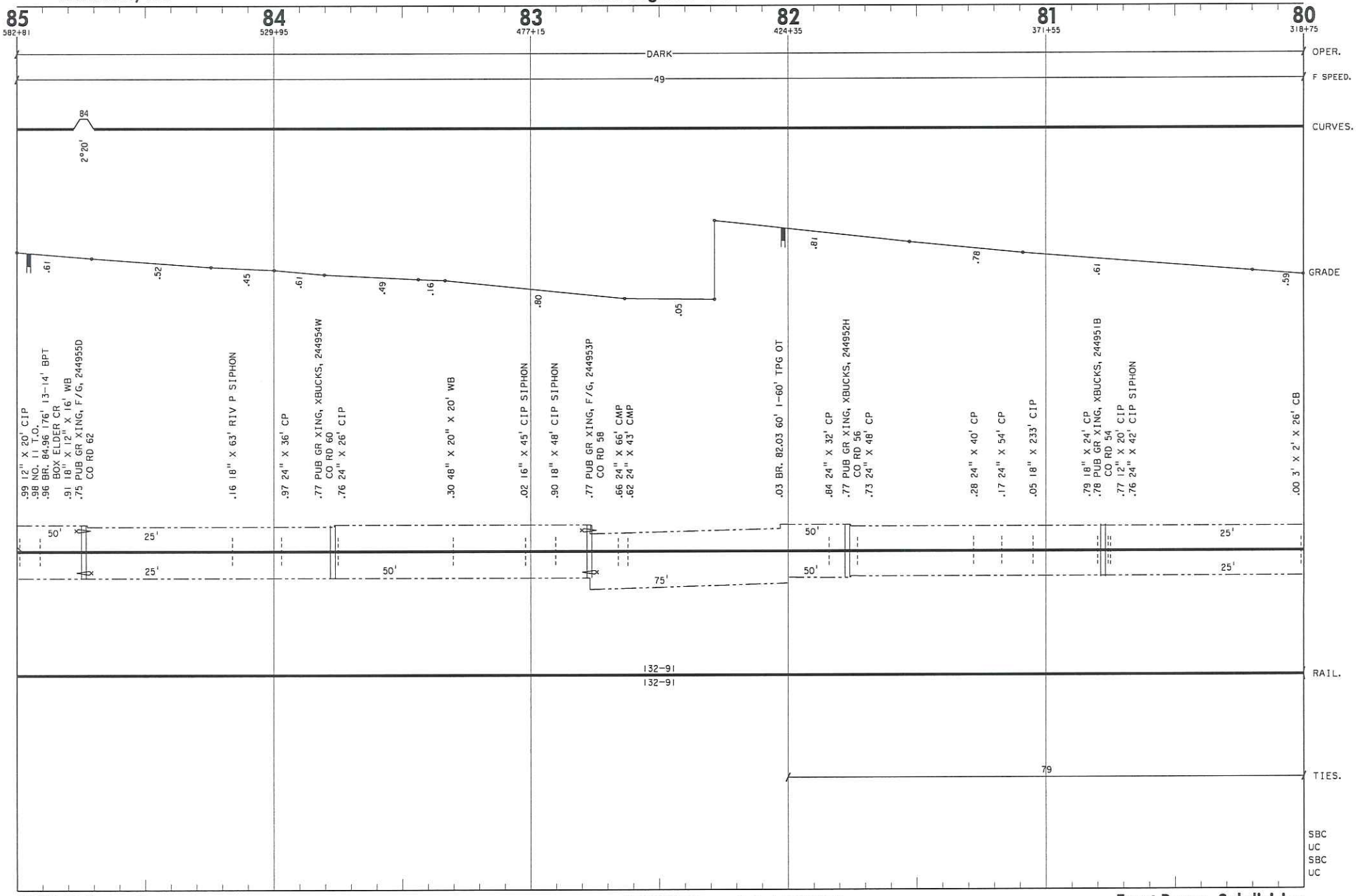
BNSF Railway Company — FRG035.DGN — Revised: 01/03/2008 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →



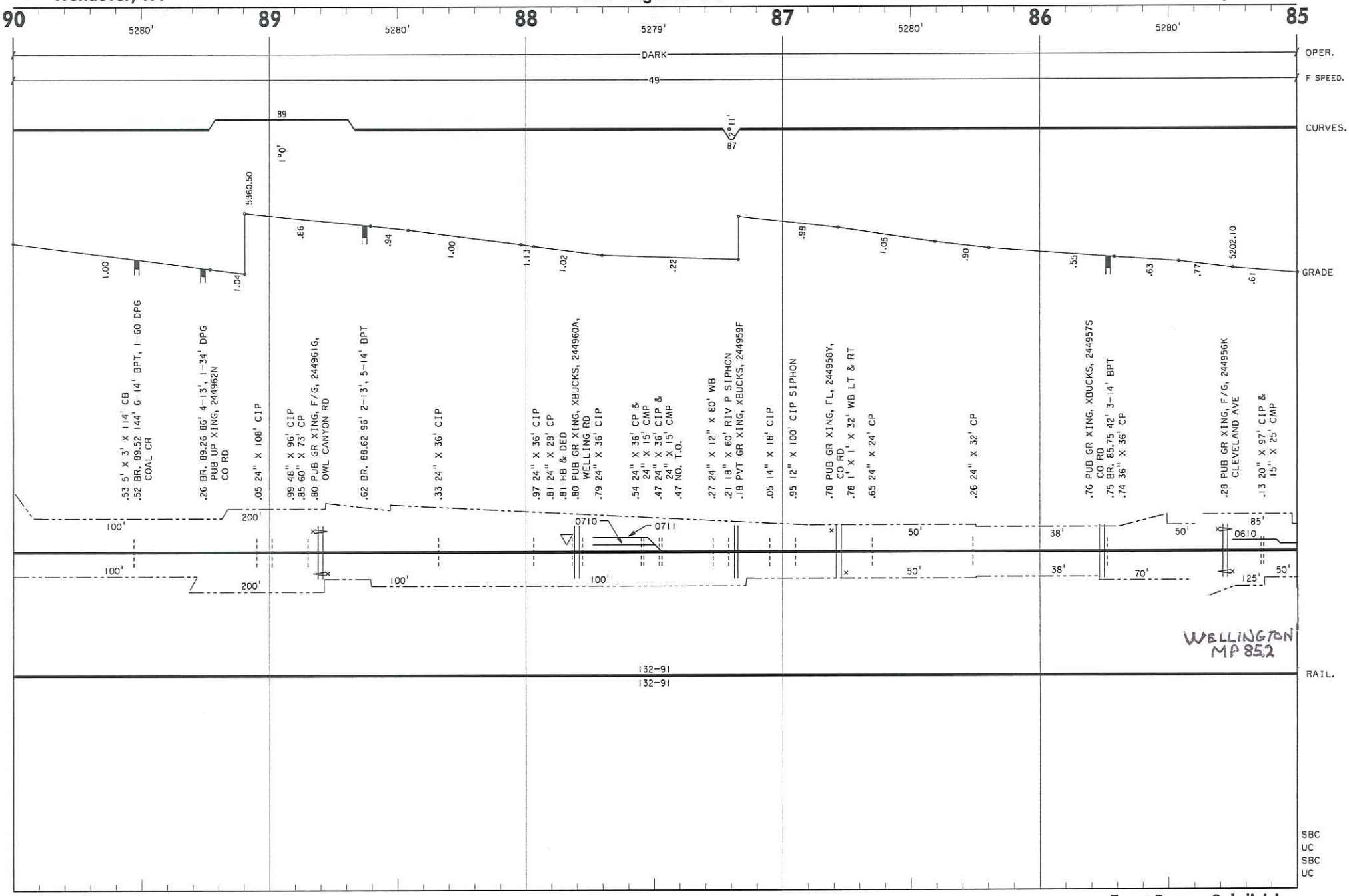
BNSF Railway Company — FRG034.DGN — Revised: 01/03/2008 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →

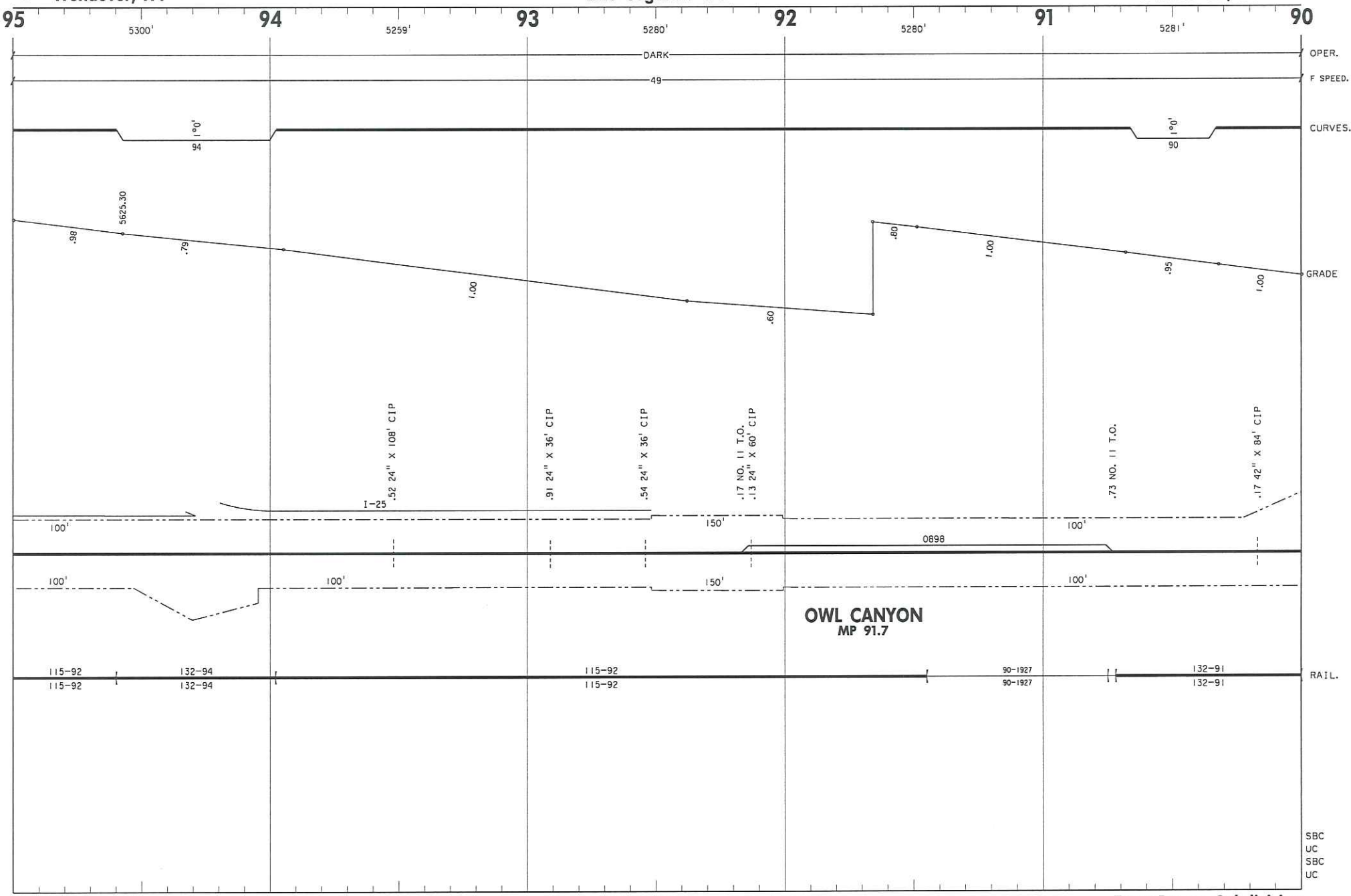


BNSF Railway Company — FRG033.DGN — Revised: 07/31/2007 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →

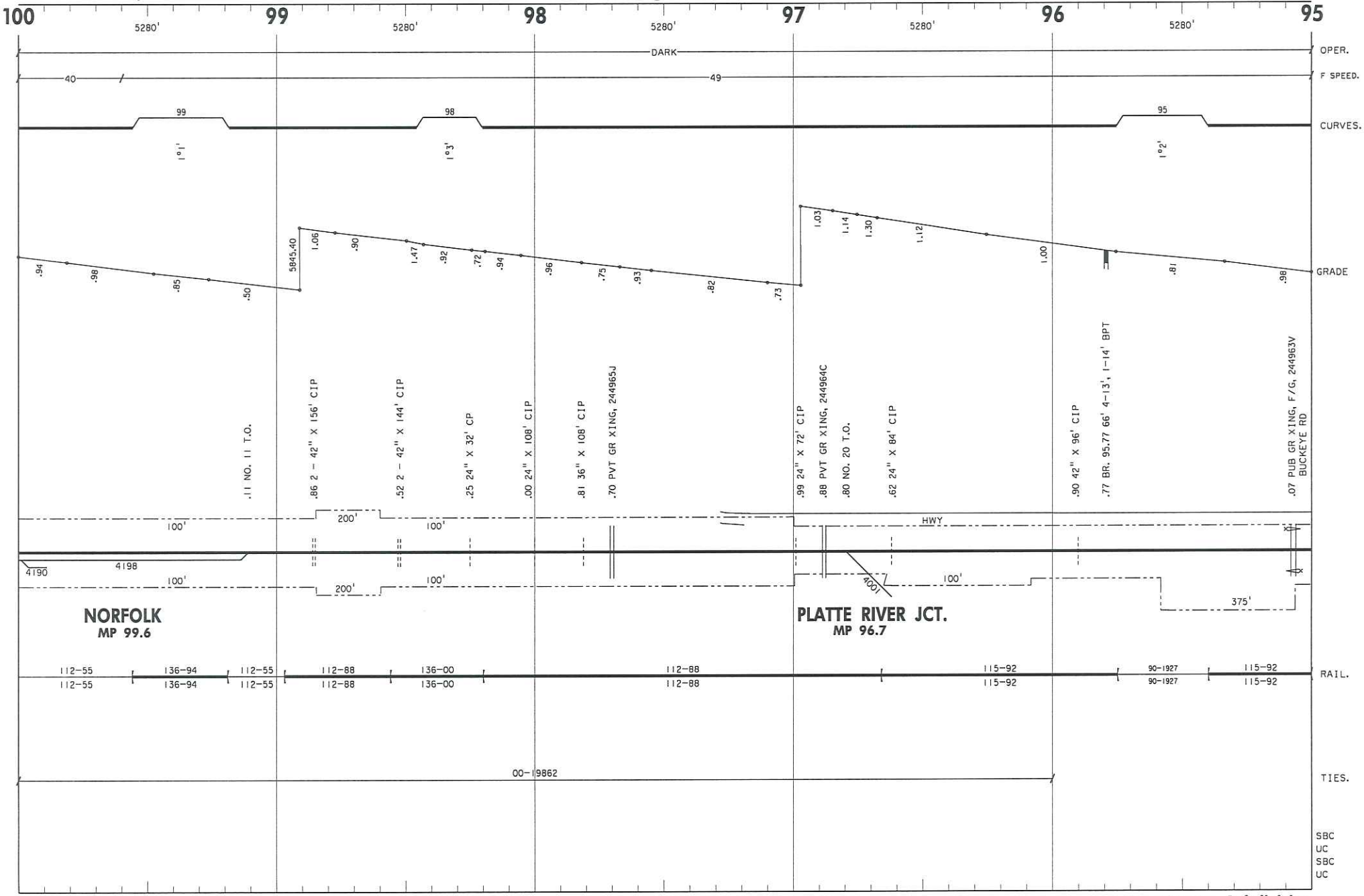


← Wendover, WY | Line Segment 476 | Denver UD, CO →



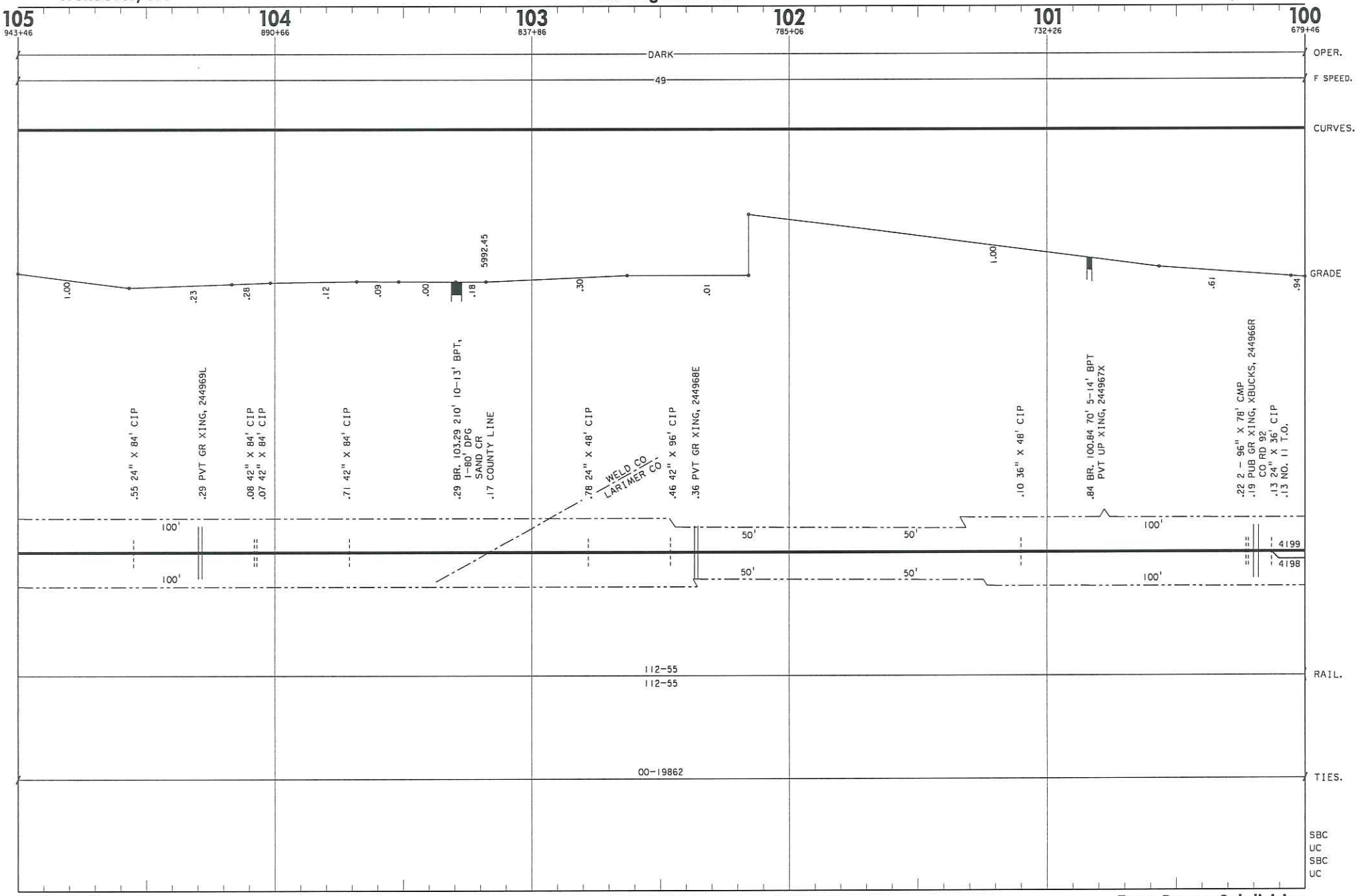
BNSF Railway Company | FRG031.DGN | Revised: 01/03/2008 | Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →



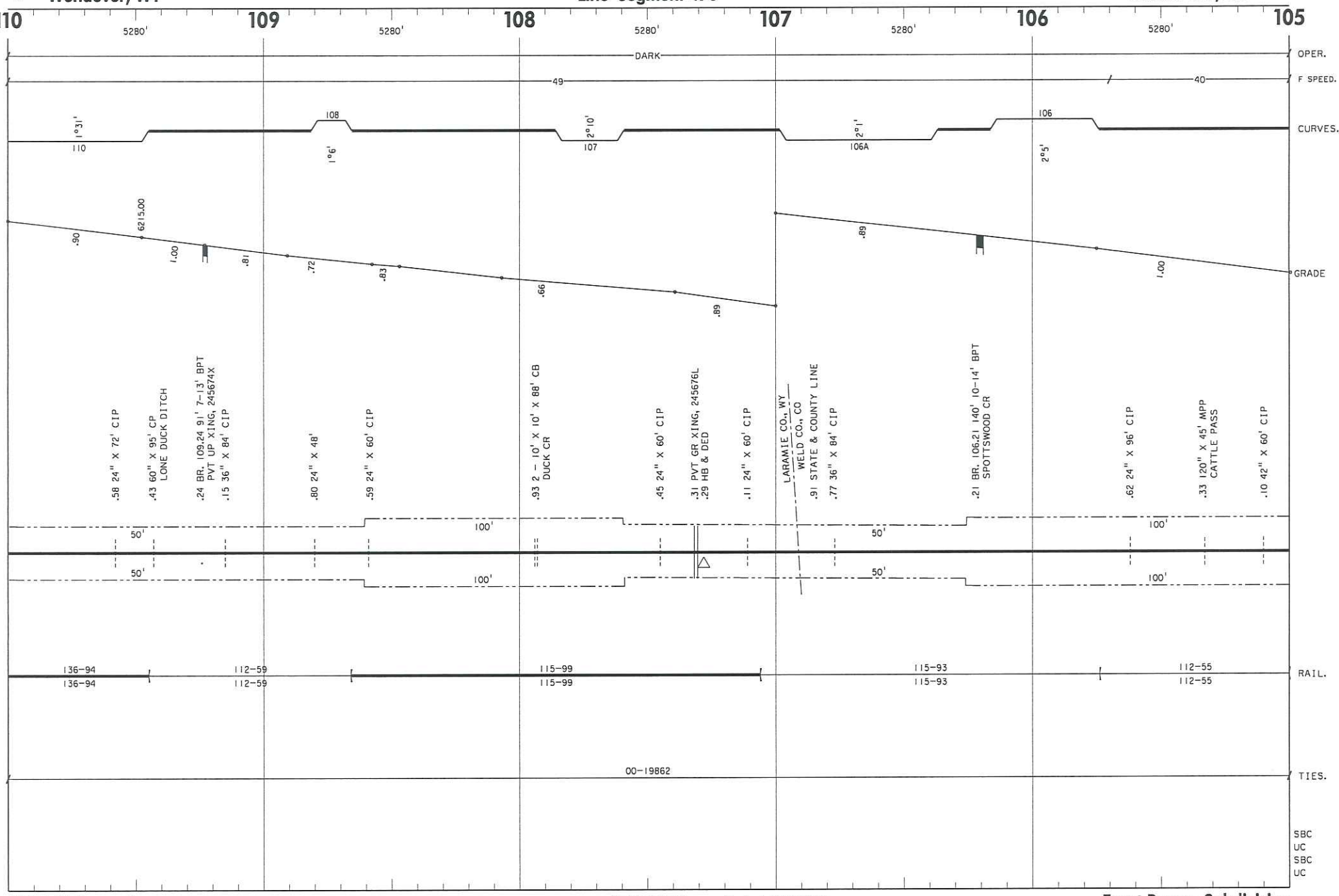
BNSF Railway Company — FRG030.DGN — Revised: 01/03/2008 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →



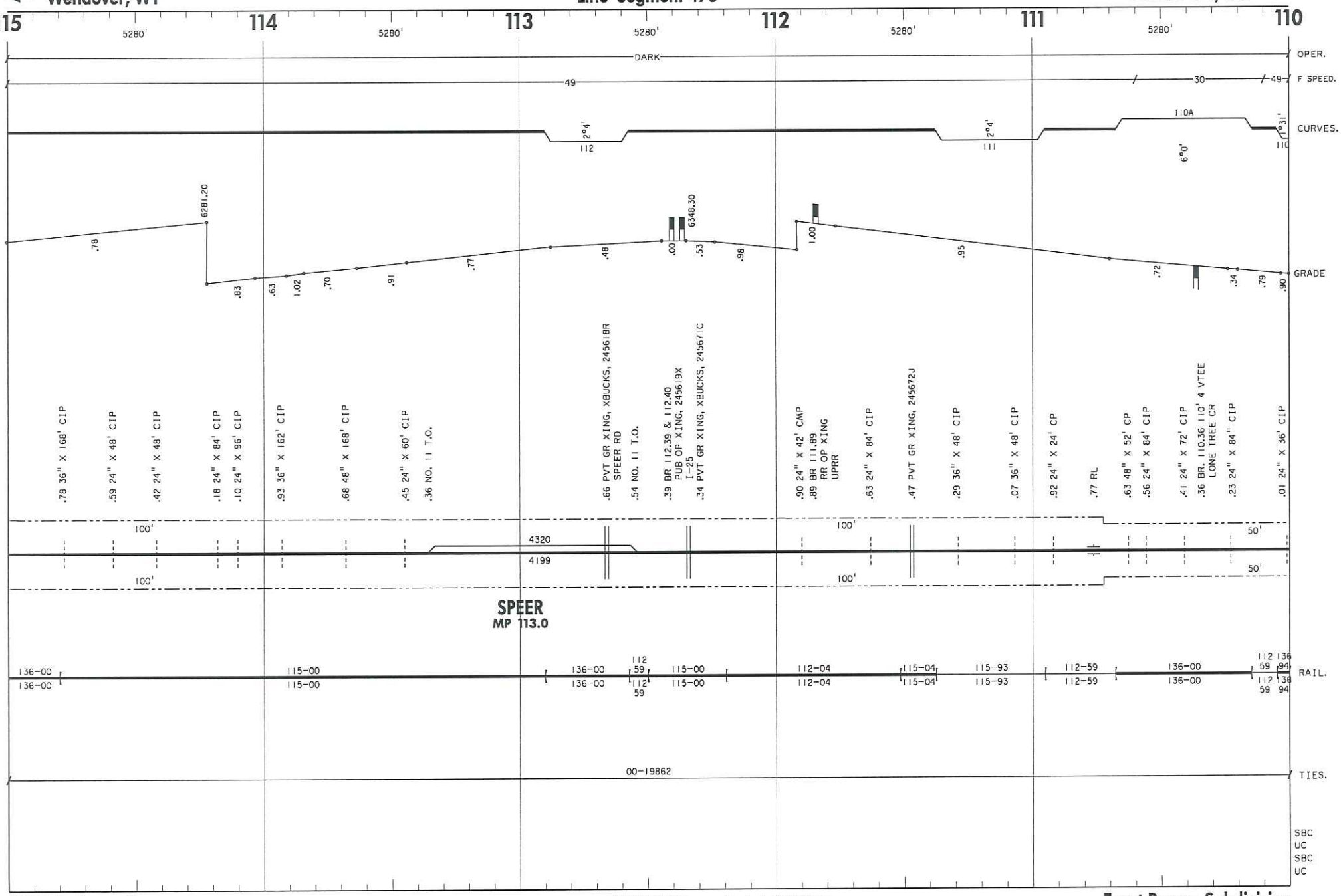
BNSF Railway Company — FRG029.DGN — Revised: 01/03/2008 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →



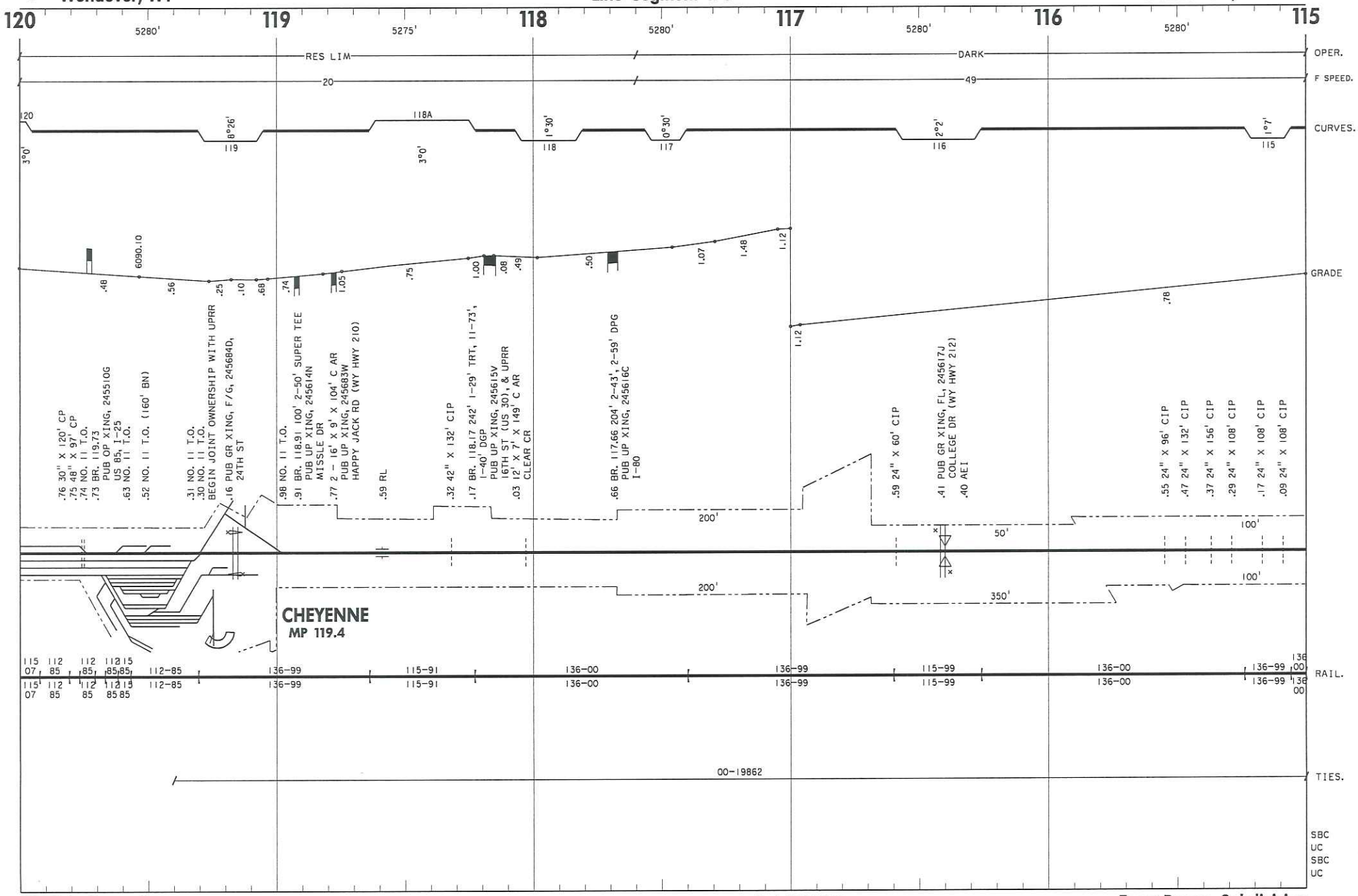
BNSF Railway Company — FRG028.DGN — Revised: 01/03/2008 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →



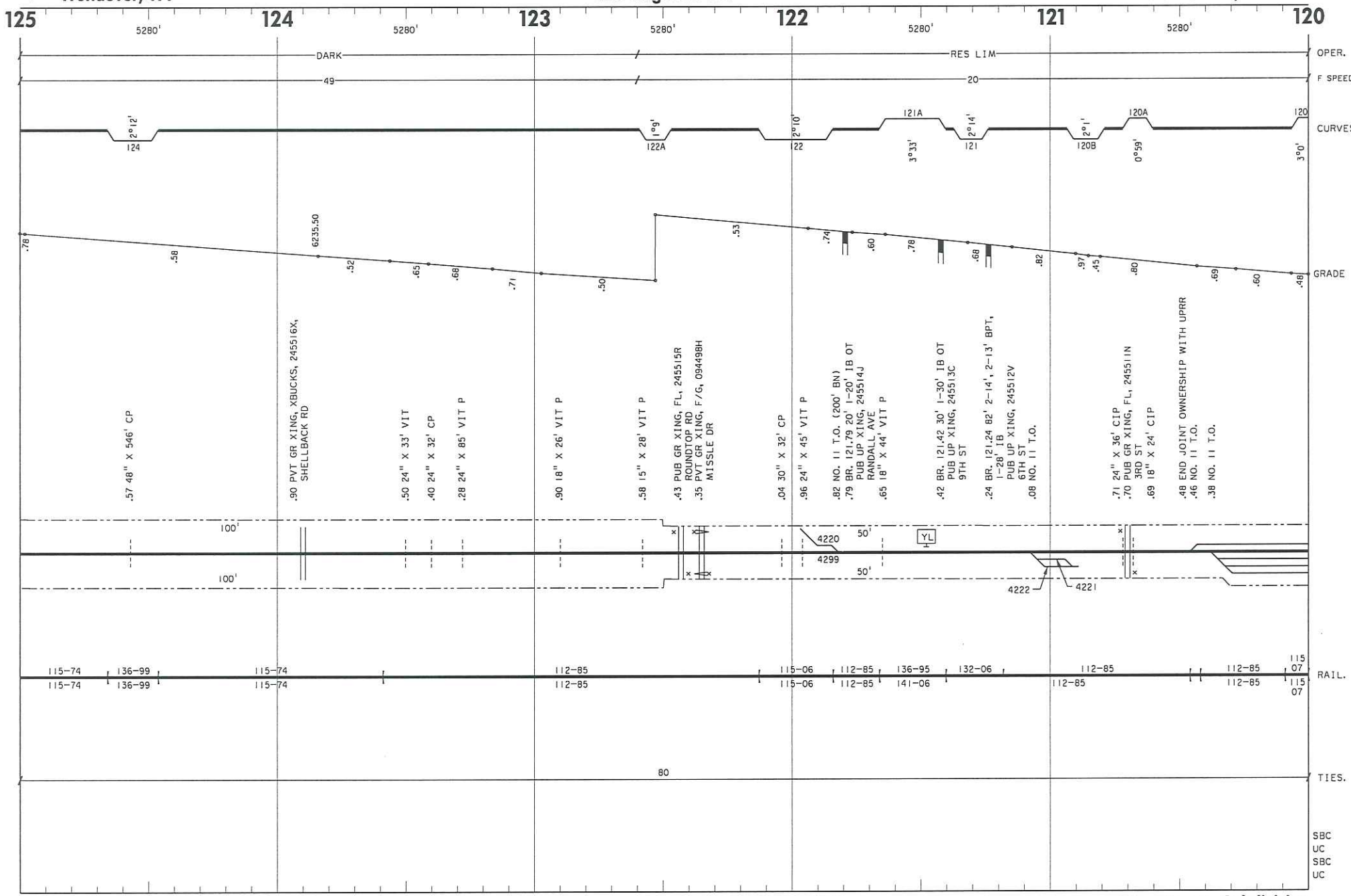
BNSF Railway Company — FRG027.DGN — Revised: 01/03/2008 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →

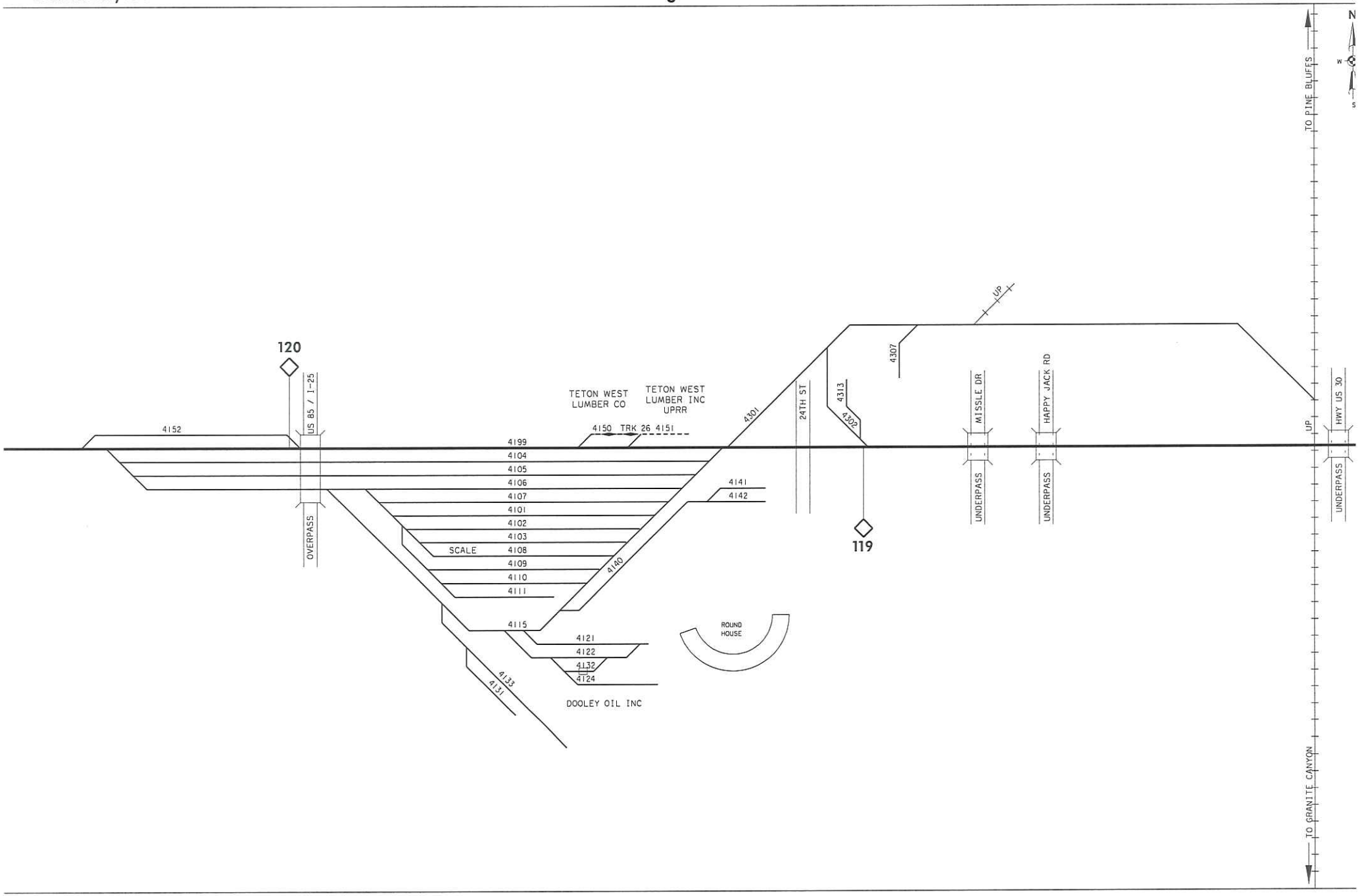


BNSF Railway Company — FRG026.DGN — Revised: 01/07/2008 — Front Range Subdivision

← Wendover, WY — Line Segment 476 — Denver UD, CO →



BNSF Railway Company — FRG025.DGN Revised: 01/07/2008 — Front Range Subdivision



BNSF OWNED & MAINT
INDUSTRY OWNED & BNSF MAINT
IND OWNED & MAINT
LEASE
TRACKAGE RIGHTS
FOREIGN TRACK

CHEYENNE, WY
Front Range Subdivision

YARD SEGMENT: 909	REVISED: 03/23/2004
STATION ABBR: CHEYEN	TRK CHT: FRG026A-T.DGN
FSAC: 41256	TEAM: CHEY41033.DGN

Appendix B

SPEED TABLE

Distance in Miles	Miles Per Hour													
	20	25	30	35	40	45	50	55	60	65	70	75	80	90
	TIME CONSUMED IN MINUTES AND SECONDS													
0.25	00:45	00:36	00:30	00:26	00:23	00:20	00:18	00:16	00:15	00:14	00:13	00:12	00:11	00:10
0.50	01:30	01:12	01:00	00:52	00:45	00:40	00:36	00:33	00:30	00:28	00:26	00:24	00:23	00:20
0.75	02:15	01:48	01:30	01:17	01:08	01:00	00:54	00:49	00:45	00:41	00:38	00:36	00:34	00:30
1.00	03:00	02:24	02:00	01:43	01:30	01:20	01:12	01:05	01:00	00:55	00:51	00:48	00:45	00:40
1.25	03:45	03:00	02:30	02:09	01:53	01:40	01:30	01:21	01:15	01:09	01:04	01:00	00:56	00:50
1.50	04:30	03:36	03:00	02:35	02:15	02:00	01:48	01:38	01:30	01:23	01:17	01:12	01:08	01:00
1.75	05:15	04:12	03:30	03:00	02:38	02:20	02:06	01:54	01:45	01:37	01:30	01:24	01:19	01:10
2.00	06:00	04:48	04:00	03:26	03:00	02:40	02:24	02:11	02:00	01:51	01:43	01:36	01:30	01:20
2.25	06:45	05:24	04:30	03:52	03:23	03:00	02:42	02:27	02:15	02:05	01:56	01:48	01:41	01:30
2.50	07:30	06:00	05:00	04:18	03:45	03:20	03:00	02:44	02:30	02:19	02:09	02:00	01:53	01:40
2.75	08:15	06:36	05:30	04:43	04:08	03:40	03:18	03:00	02:45	02:32	02:21	02:12	02:04	01:50
3.00	09:00	07:12	06:00	05:09	04:30	04:00	03:36	03:16	03:00	02:46	02:34	02:24	02:15	02:00
3.25	09:45	07:48	06:30	05:35	04:53	04:20	03:54	03:32	03:15	03:00	02:47	02:36	02:26	02:10
3.50	10:30	08:24	07:00	06:00	05:15	04:40	04:12	03:49	03:30	03:14	03:00	02:48	02:38	02:20
3.75	11:15	09:00	07:30	06:26	05:38	05:00	04:30	04:05	03:45	03:28	03:13	03:00	02:49	02:30
4.00	12:00	09:36	08:00	06:51	06:00	05:20	04:48	04:22	04:00	03:42	03:26	03:12	03:00	02:40
4.25	12:45	10:12	08:30	07:17	06:23	05:40	05:06	04:38	04:15	03:56	03:39	03:24	03:11	02:50
4.50	13:30	10:48	09:00	07:43	06:45	06:00	05:24	04:55	04:30	04:10	03:52	03:36	03:23	03:00
4.75	14:15	11:24	09:30	08:08	07:08	06:20	05:42	05:11	04:45	04:23	04:04	03:48	03:34	03:10
5.00	15:00	12:00	10:00	08:34	07:30	06:40	06:00	05:27	05:00	04:37	04:17	04:00	03:45	03:20
5.25	15:45	12:36	10:30	09:00	07:53	07:00	06:18	05:43	05:15	04:51	04:30	04:12	03:56	03:30
5.50	16:30	13:12	11:00	09:26	08:15	07:20	06:36	06:00	05:30	05:05	04:43	04:24	04:08	03:40
5.75	17:15	13:48	11:30	09:51	08:38	07:40	06:54	06:16	05:45	05:18	04:56	04:36	04:19	03:50
6.00	18:00	14:24	12:00	10:17	09:00	08:00	07:12	06:33	06:00	05:32	05:09	04:48	04:30	04:00
6.25	18:45	15:00	12:30	10:43	09:23	08:20	07:30	06:49	06:15	05:46	05:22	05:00	04:41	04:10
6.50	19:30	15:36	13:00	11:09	09:45	08:40	07:48	07:06	06:30	06:00	05:35	05:12	04:53	04:20
6.75	20:15	16:12	13:30	11:34	10:08	09:00	08:06	07:22	06:45	06:14	05:47	05:24	05:04	04:30
7.00	21:00	16:48	14:00	12:00	10:30	09:20	08:24	07:38	07:00	06:28	06:00	05:36	05:15	04:40
7.25	21:45	17:24	14:30	12:26	10:53	09:40	08:42	07:54	07:15	06:42	06:13	05:48	05:26	04:50
7.50	22:30	18:00	15:00	12:52	11:15	10:00	09:00	08:11	07:30	06:56	06:26	06:00	05:38	05:00
7.75	23:15	18:36	15:30	13:17	11:38	10:20	09:18	08:27	07:45	07:09	06:38	06:12	05:49	05:10
8.00	24:00	19:12	16:00	13:43	12:00	10:40	09:36	08:44	08:00	07:23	06:51	06:24	06:00	05:20
8.25	24:45	19:48	16:30	14:09	12:23	11:00	09:54	09:00	08:15	07:37	07:04	06:36	06:11	05:30
8.50	25:30	20:24	17:00	14:35	12:45	11:20	10:12	09:17	08:30	07:51	07:17	06:48	06:23	05:40
8.75	26:15	21:00	17:30	15:00	13:08	11:40	10:30	09:33	08:45	08:04	07:30	07:00	06:34	05:50
9.00	27:00	21:36	18:00	15:26	13:30	12:00	10:48	09:49	09:00	08:18	07:43	07:12	06:45	06:00
9.25	27:45	22:12	18:30	15:52	13:53	12:20	11:06	10:05	09:15	08:32	07:56	07:24	06:56	06:10
9.50	28:30	22:48	19:00	16:18	14:15	12:40	11:24	10:22	09:30	08:46	08:09	07:36	07:08	06:20
9.75	29:15	23:24	19:30	16:43	14:38	13:00	11:42	10:38	09:45	09:00	08:21	07:48	07:19	06:30
10.00	30:00	24:00	20:00	17:09	15:00	13:20	12:00	10:55	10:00	09:14	08:34	08:00	07:30	06:40
	Miles Per Hour													
	20	25	30	35	40	45	50	55	60	65	70	75	80	90