

= Interstate 70 in Colorado =

Interstate 70 (I @-@ 70) is a transcontinental Interstate Highway in the United States , stretching from Cove Fort , Utah to Baltimore , Maryland . In Colorado , the highway traverses an east ? west route across the center of the state . In western Colorado , the highway connects the metropolitan areas of Grand Junction and Denver via a route through the Rocky Mountains . In eastern Colorado , the highway crosses the Great Plains , connecting Denver with metropolitan areas in Kansas and Missouri . Bicycles and other non @-@ motorized vehicles , normally prohibited on Interstate Highways , are allowed on those stretches of I @-@ 70 in the Rockies where no other through route exists .

The U.S. Department of Transportation (USDOT) lists the construction of I @-@ 70 among the engineering marvels undertaken in the Interstate Highway system , and cites four major accomplishments : the section through the Dakota Hogback , Eisenhower Tunnel , Vail Pass and Glenwood Canyon . The Eisenhower Tunnel , with a maximum elevation of 11 @,@ 158 feet (3 @,@ 401 m) and length of 1 @.@ 7 miles (2 @.@ 7 km) , is the longest mountain tunnel and highest point along the Interstate Highway System . The portion through Glenwood Canyon was completed on October 14 , 1992 . This was one of the final pieces of the Interstate Highway System to open to traffic , and is one of the most expensive rural highways per mile built in the United States . The Colorado Department of Transportation (CDOT) earned the 1993 Outstanding Civil Engineering Achievement Award from the American Society of Civil Engineers for the completion of I @-@ 70 through the canyon .

When the Interstate Highway system was in the planning stages , the western terminus of I @-@ 70 was proposed to be at Denver . The portion west of Denver was included into the plans after lobbying by Governor Edwin C. Johnson , for whom one of the tunnels along I @-@ 70 is named . East of Idaho Springs , I @-@ 70 was built along the corridor of U.S. Highway 40 , one of the original transcontinental U.S. Highways . West of Idaho Springs , I @-@ 70 was built along the route of U.S. Highway 6 , which was extended into Colorado during the 1930s .

= = Route description = =

= = = Colorado River = = =

I @-@ 70 enters Colorado from Utah , concurrent with US 6 and US 50 , on a plateau between the north rim of Ruby Canyon of the Colorado River and the south rim of the Book Cliffs . The plateau ends just past the state line and the highway descends into the Grand Valley , formed by the Colorado River and its tributaries . The Grand Valley is home to several towns and small cities that form the Grand Junction Metropolitan Statistical Area , the largest conurbation in the area locally known as the Western Slope . The highway directly serves the communities of Fruita , Grand Junction and Palisade . Grand Junction is the largest city between Denver and Salt Lake City and serves as the economic hub of the area . The freeway passes to the north of downtown , while US 6 and 50 retain their original routes through downtown . US 6 rejoins I @-@ 70 east of Grand Junction ; US 50 departs on a course toward Pueblo .

I @-@ 70 exits the valley through De Beque Canyon , a path carved by the Colorado River that separates the Book Cliffs from Battlement Mesa . The river and its tributaries provide the course for the ascent up the Rocky Mountains . In the canyon , I @-@ 70 enters the Beavertail Mountain Tunnel , the first of several tunnels built to route the freeway across the Rockies . This tunnel design features a curved sidewall , unusual for tunnels in the United States , where most tunnels feature a curved roof and flat side @-@ walls . Engineers borrowed a European design to give the tunnel added strength . After the canyon winds past the Book Cliffs , the highway follows the Colorado River through a valley containing the communities of Parachute and Rifle .

= = = Glenwood Canyon = = =

Approaching the city of Glenwood Springs , the highway enters Glenwood Canyon . Both the federal and state departments of transportation have praised the engineering achievement required to build the freeway through the narrow gorge while preserving the natural beauty of the canyon . A 12 @-@ mile (19 km) section of roadway features the No Name Tunnel , Hanging Lake Tunnel , Reverse Curve Tunnel , 40 bridges and viaducts , and miles of retaining walls . Through a significant portion of the canyon , the eastbound lanes extend cantilevered over the Colorado River and the westbound lanes are suspended on a viaduct several feet above the canyon floor . Along this run , the freeway hugs the north bank of the Colorado River , while the main line of the former Denver and Rio Grande Western Railroad (now part of Union Pacific) occupies the south bank .

To minimize the hazards along this portion , a command center staffed with emergency response vehicles and tow trucks on standby monitors cameras along the tunnels and viaducts in the canyon . Traffic signals have been placed at strategic locations to stop traffic in the event of an accident , and variable message signs equipped with radar guns will automatically warn motorists exceeding the design speed of one of the curves . The USDOT makes provision for bicycles , which are usually prohibited along Interstate Highways , along the freeway corridor in Glenwood Canyon .

= = = Rocky Mountains = = =

The highway departs the Colorado River near Dotsero , the name given to the railroad separation for the two primary mountain crossings , the original via Tennessee Pass / Royal Gorge and the newer and shorter Moffat Tunnel route . I @-@ 70 uses a separate route between the two rail corridors . From this junction I @-@ 70 follows the Eagle River toward Vail Pass , at an elevation of 10 @,@ 666 feet (3 @,@ 251 m) . In this canyon I @-@ 70 reaches the western terminus of U.S. Highway 24 , which meanders through the Rockies before rejoining I @-@ 70 . US 24 is known as the Highway of the Fourteeners , from the concentration of mountains exceeding 14 @,@ 000 feet (4 @,@ 300 m) along the highway corridor . Along the ascent , I @-@ 70 serves the ski resort town of Vail and the ski areas of Beaver Creek Resort , Vail Ski Resort and Copper Mountain .

The construction of the freeway over Vail Pass is also listed as an engineering marvel . One of the challenges of this portion is the management of the wildlife that roams this area . Several parts of the approach to the pass feature large fences that prevent wildlife from crossing the freeway and direct the animals to one of several underpasses . At least one underpass is located along a natural migratory path and has been landscaped to encourage deer to cross .

The highway descends to Dillon Reservoir , near the town of Frisco , and begins one final ascent to the Eisenhower Tunnel , where the freeway crosses the Continental Divide . At the time of dedication , this tunnel was the highest vehicular tunnel in the world , at 11 @,@ 158 feet (3 @,@ 401 m) . As of 2010 , the facility was still the highest vehicular tunnel in the United States . The Eisenhower Tunnel is noted as both the longest mountain tunnel and highest point on the Interstate Highway System . The tunnel has a command center , staffed with 52 full @-@ time employees , to monitor traffic , remove stranded vehicles , and maintain generators to keep the tunnel 's lighting and ventilation systems running in the event of a power failure . Signals are placed at each entrance and at various points inside the tunnel to close lanes or stop traffic in an emergency . There are several active and former ski resorts in the vicinity of the tunnel , including Breckenridge Ski Resort , Keystone Resort , Arapahoe Basin , Loveland Ski Area , Berthoud Pass Ski Area and Winter Park Resort .

= = = Clear Creek = = =

The freeway follows Clear Creek down the eastern side of the Rockies , passing through the Veterans Memorial Tunnels near Idaho Springs . Farther to the east , I @-@ 70 departs the US 6 corridor , which continues to follow Clear Creek through a narrow , curving gorge . The interstate , however , follows the corridor of US 40 out of the canyon . The highway crests a small mountain near Genesee Park to descend into Mount Vernon Canyon to exit the Rocky Mountains . This

portion features grade @-@ warning signs with unusual messages , such as " Trucks : Don 't be fooled , " " Truckers , you are not down yet , " and " Are your brakes adjusted and cool ? " Runaway truck ramps are a prominent feature along this portion of I @-@ 70 , with a total of seven used along the descent of either side the Continental Divide to stop trucks with failed brakes .

The last geographic feature of the Rocky Mountains traversed before the highway reaches the Great Plains is the Dakota Hogback . The path through the hogback features a massive cut that exposes various layers of rock millions of years old . The site includes a nature study area for visitors .

= = = Great Plains = = =

As the freeway passes from the Rocky Mountains to the Great Plains , I @-@ 70 enters the Denver metropolitan area , part of a larger urban area called the Front Range Urban Corridor . The freeway arcs around the northern edge of the LoDo district , the common name of the lower downtown area of Denver . Through the downtown area , US 40 is routed along Colfax Avenue , which served as the primary east ? west artery through the Denver area before the construction of I @-@ 70 . Through downtown , US 6 is routed along 6th Avenue before departing the I @-@ 70 corridor to join Interstate 76 on a northeast course toward Nebraska . The freeway meets Interstate 25 in an interchange frequently called the Mousetrap . From I @-@ 25 on to I @-@ 225 , I @-@ 70 serves ? together with those two Interstates ? as part of an inner beltway around Denver .

I @-@ 70 has one official branch in Colorado , Interstate 270 , which connects the interstate with the Denver ? Boulder Turnpike . Where these two freeways merge is the busiest portion of I @-@ 70 in the state , with an annual average daily traffic of 183 @,@ 000 vehicles per day . While State Highway 470 and E @-@ 470 are not officially branches of I @-@ 70 , they are remnants of plans for an I @-@ 470 outer beltway around Denver that were cancelled when the allocated funds were spent elsewhere .

Leaving Denver , the highway serves the redevelopment areas on the former site of Stapleton International Airport ; runway 17R / 35L crossed over the Interstate at the runway 's midsection . East of Aurora , I @-@ 70 rejoins the alignment of U.S. Highway 40 at Colfax Avenue . The freeway proceeds east across the Great Plains , briefly dipping south to serve the city of Limon , which bills itself as Hub City because of the many rail and road arteries that intersect there . I @-@ 70 enters Kansas near Burlington , a small community known for having one of the oldest carousels in the United States .

= = History = =

As first proposed in 1944 , the western terminus of I @-@ 70 was Denver , along the corridor of US 40 . The portion across the Rocky Mountains was added to the plans , after lobbying by Colorado officials , following the US 6 corridor . The origins of both the US 40 and US 6 pre @-@ date the U.S. System of numbered highways , using established transcontinental trails .

= = = Earlier routes = = =

Before the formation of the United States Numbered Highways , the U.S. relied on an informal network of roads , organized by various competing interests , collectively called the auto trail system . The surveyors of most trails chose either South Pass in Wyoming or a southern route through New Mexico to traverse the Rocky Mountains . Both options were less formidable than the higher mountain passes in Colorado , but left the state without a transcontinental artery . When the planners of the Lincoln Highway also decided to cross the Rockies in Wyoming , officials pressed for a loop to branch from the main route in Nebraska , enter Colorado , and return to the main route in Wyoming . While the Lincoln Highway was briefly routed this way , the loop proved impractical and was soon removed .

After losing the connection to the Lincoln Highway , officials convinced planners of the Victory

Highway to traverse the state . The highway entered Colorado from Kansas along what was previously called the Smoky Hill Trail . The highway crossed the mountains along a trail blazed by a railroad surveyor and captain in the American Civil War , cresting at Berthoud Pass . After a round of political infighting between Utah and Nevada , the Victory Highway would become the Lincoln Highway 's main rival for San Francisco @-@ bound traffic . When the U.S. Highway system was unveiled in 1926 , the Victory Highway was numbered U.S. Highway 40 .

While US 6 was also one of the original 1926 U.S. Highways , the road originally served the portion of the United States east of the Rocky Mountains . The highway was not extended to the Pacific coast until 1937 , mostly following the Midland Trail . Around the time the U.S. Highway system was formed , the portion of the Midland Trail through Glenwood Canyon , known as the Taylor State Road , was destroyed by a flood . When US 6 was extended , the Works Progress Administration was rebuilding the road through the canyon and the Public Works Administration was nearing completion of a new highway over Vail Pass . In western Colorado , US 6 was routed concurrent with US 50 from the Utah state line to Grand Junction and eventually replaced US 24 from Grand Junction to near Vail . To keep these routes over the Rockies competitive with alternatives in other states , the Colorado Department of Highways relied on ingenuity to keep the roads safe . The department pioneered new machines to clear snow and various bridge and culvert designs to protect the roads from flooding .

= = = Interstate Highway planning = = =

Governor Edwin C. Johnson , for whom one of the tunnels along I @-@ 70 was later named , was a primary force in persuading the planners of the Interstate Highway System to extend the highway across the state . He stated to the Senate subcommittee :

You are going to have a four @-@ lane highway through Wyoming . You are going to build two four @-@ lane highways through New Mexico and Arizona . Colorado needs to be able to compete with our neighboring states . We do not want to take anything away from them . We do not want them to get way out ahead of us , either , because these interstate highways are going to be very attractive highways for the East and West to travel on .

Colorado held several meetings to convince reluctant Utah officials they would benefit from a freeway link between Denver and Salt Lake City . Utah officials expressed concerns that , given the terrain between these cities , this link would be difficult to build . They later expressed concerns that the construction would drain resources from completing Interstate Highways they deemed to have a higher priority . Colorado officials persisted , presenting three alternatives to route I @-@ 70 west of Denver , using the corridors of US 40 , US 6 and a route starting at Pueblo , proceeding west along US 50 / US 285 / US 24 . In March 1955 , Colorado officials succeeded in convincing Utah officials with the state legislature passing a resolution supporting a link with Denver . The two states jointly issued a proposal to the U.S. Congress that would extend the plans for I @-@ 70 along the US 6 corridor . Under this proposal the freeway would terminate at I @-@ 15 near Spanish Fork , Utah , linking the Front Range and Wasatch Front metropolitan areas .

Congress approved the extension of I @-@ 70 ; however , the route still had to be approved by the representatives of the U.S. military on the planning committee . Military representatives were concerned that plans for this new highway network did not have a direct connection from the central U.S. to southern California ; and further felt Salt Lake City was adequately connected . Military planners approved the extension , but moved the western terminus south to Cove Fort , using I @-@ 70 as part of a link between Denver with Los Angeles instead of Salt Lake City . Utah officials objected to the modification , complaining they were being asked to build a long and expensive freeway that would serve no populated areas of the state . After being told this was the only way the military would approve the extension , Utah officials agreed to build the freeway along the approved route .

= = = Construction = = =

The first Colorado portion of I @-@ 70 opened to traffic in 1961 . This section bypassed and linked Idaho Springs to the junction where US 6 currently separates from I @-@ 70 west of the city . The majority of the alignment through Denver was completed by 1964 . The Mousetrap reused some structures that were built in 1951 , before the formation of the Interstate Highway system . The last piece east of Denver opened to traffic in 1977 .

= = = = Eisenhower Tunnel = = = =

Planning on how to route the freeway over the Rocky Mountains began in the early 1960s . The US 6 corridor crosses two passes : Loveland Pass , at an elevation of 11 @,@ 992 feet (3 @,@ 655 m) and Vail Pass , at 10 @,@ 666 feet (3 @,@ 251 m) . Engineers recommended tunneling under Loveland Pass to bypass the steep grades and hairpin curves required to navigate US 6 . The project was originally called the Straight Creek Tunnel , after the waterway that runs along the western approach . The tunnel was later renamed the Eisenhower ? Johnson Memorial Tunnel , after U.S. President Dwight D. Eisenhower and Colorado Governor Edwin C. Johnson .

Construction on the first bore of the tunnel was started on March 15 , 1968 . Construction efforts suffered many setbacks and the project went well over time and budget . One of the biggest setbacks was the discovery of fault lines in the path of the tunnel that were not discovered during the pilot bores . These faults began to slip during construction and emergency measures had to be taken to protect the tunnels and workers from cave @-@ ins and collapses . A total of nine workers were killed during the construction of both bores . Further complicating construction was that the boring machines could not work as fast as expected at such high altitudes , and the productivity was significantly less than planned . The frustration prompted one engineer to comment , " We were going by the book , but the damned mountain couldn 't read " . The first bore was dedicated March 8 , 1973 . Initially this tunnel was used for two @-@ way traffic , with one lane for each direction . The amount of traffic through the tunnel exceeded predictions , and efforts soon began to expedite construction on the second tube (the Johnson bore) , which was finished on December 21 , 1979 . The initial engineering cost estimate for the Eisenhower bore was \$ 42 million ; the actual cost was \$ 108 million (equivalent to \$ 576 million today) . Approximately 90 % of the funds were paid by the federal government , with the state of Colorado paying the rest . At the time , this figure set a record for the most expensive federally aided project . The excavation cost for the Johnson bore was \$ 102 @.@ 8 million (equivalent to \$ 335 million today) .

The tunnel construction became unintentionally involved in the women 's rights movement when Janet Bonnema was given a position in the construction of the Straight Creek Tunnel project . After 18 months on the job , however , she had still not entered the tunnel . There was opposition to a woman entering the construction site ; one supervisor stated that if she entered , " Those workers would flat walk out of that there tunnel and they 'd never come back " . Emboldened by the passage of an equal rights law in Colorado , she finally entered the tunnel on November 9 , 1972 . Several workers did walk off the job , but most returned the next day .

= = = = Vail Pass = = = =

While designing the Eisenhower Tunnel , controversies erupted over how to build the portions over Vail Pass and Glenwood Canyon . The route of US 6 over Vail Pass has a distinctive " V " shape . Initially engineers thought they could shorten the route of I @-@ 70 by about 10 miles (16 km) by tunneling from Gore Creek to South Willow Creek , an alternative known as the Red Buffalo Tunnel . This alternative sparked a nationwide controversy as it would require an easement across federally protected lands , through what is now called the Eagles Nest Wilderness . After the U.S. Secretary of Agriculture refused to grant the easement , the engineers agreed to follow the existing route across Vail Pass . The engineers added infrastructure to accommodate wildlife , and had significant portions of the viaducts constructed offsite and lifted in place to minimize the environmental footprint . The grade over Vail Pass reaches seven percent .

===== Glenwood Canyon =====

Glenwood Canyon has served as the primary transportation artery through the Rocky Mountains , even before the creation of U.S. highways . Railroads have used the canyon since 1887 and a dirt road was built through the canyon in the early 20th century . The first paved road was built from 1936 to 1938 at a cost of \$ 1 @. @ 5 million (equivalent to \$ 25 million today) .

With the Eisenhower Tunnel finished , the last remaining obstacle for I @-@ 70 to be an interstate commercial artery was the two lane , non @-@ freeway portion in Glenwood Canyon . Construction had started on this section in the 1960s with a small section opening to traffic in 1966 . The remainder was stopped due to environmentalist protests that caused a 30 @-@ year controversy . The original design was criticized as " the epitome of environmental insensitivity " . Engineers scrapped the original plans and started work on a new design that would minimize additional environmental impacts . A new design was underway by 1971 , which was approved in 1975 ; however , environmental groups filed lawsuits to stop construction , and the controversy continued even when construction finally resumed in 1981 . The final design included 40 bridges and viaducts , three additional tunnel bores (two were completed before construction was stopped in the 1960s) and 15 miles (24 km) of retaining walls for a stretch of freeway 12 miles (19 km) long . The project was further complicated by the need to build the four @-@ lane freeway without disturbing the operations of the railroad . This required using special and coordinated blasting techniques . Engineers designed two separate tracks for the highway , one elevated above the other , to minimize the footprint in the canyon . The final design was praised for its environmental sensitivity . A Denver architect who helped design the freeway proclaimed , " Most of the people in western Colorado see it as having preserved the canyon . " He further stated , " I think pieces of the highway elevate to the standard of public art . " A portion of the project included shoring up the banks of the Colorado River to repair damage and remove flow restrictions created in the initial construction of US 6 in the 1930s .

The freeway was finally completed on October 14 , 1992 , in a ceremony covered nationwide . Most coverage celebrated the engineering achievement or noted this was the last major piece of the Interstate Highway System to open to traffic . However , newspapers in western Colorado celebrated the end of the frustrating traffic delays . For most of the final 10 years of construction , only a single lane of traffic that reversed direction every 30 minutes remained open in the canyon . One newspaper proudly proclaimed " You heard right . For the first time in more than 10 years , construction delays along that 12 @-@ mile (19 km) stretch of Interstate 70 will be non @-@ existent . "

The cost was \$ 490 million (equivalent to \$ 800 million today) to build 12 miles (19 km) , 40 times the average cost per mile predicted by the planners of the Interstate Highway system . This figure exceeded that of Interstate 15 through the Virgin River Gorge , which was previously proclaimed the most expensive rural freeway in the United States . The construction of I @-@ 70 through Glenwood Canyon earned 30 awards for the Colorado Department of Transportation , including the 1993 Outstanding Civil Engineering Achievement Award from the American Society of Civil Engineers . At the dedication it was claimed that I @-@ 70 through Glenwood Canyon was the final piece of the Interstate Highway System to open to traffic . For this reason , the system was proclaimed to be complete . However , as of 2009 , at least two sections of the original Interstate Highway System have not been constructed : a section of Interstate 95 in central New Jersey , and a section of I @-@ 70 in Breezewood , Pennsylvania .

===== Legacy =====

When first approved , the extension of I @-@ 70 from Denver to Cove Fort was criticized in some area newspapers as a road to nowhere ; an information liaison specialist with the U.S. Department of Transportation in Baltimore , Maryland ? the eastern terminus of I @-@ 70 ? claims people have asked " did we think Baltimoreans were so desperate to get to Cove Fort that we were willing to pay \$ 4 billion to get them there ? " However , a resident engineer with the USDOT has called the

extension one of the " crown jewels " of the Interstate Highway System . In Colorado , the freeway helped unite the state , despite the two halves being separated by the formidable Rocky Mountains . The Eisenhower Tunnel alone is credited with saving up to an hour from the drive across the state . Prior to I @-@ 70 's construction , the highway through Glenwood Canyon was one of the most dangerous in the state . With the improvements , the accident rate has dropped 40 % even though traffic through the canyon has substantially increased . The Colorado Department of Transportation is considering the nomination of various portions of I @-@ 70 as a National Historic Landmark , even though the freeway will not qualify as historical for several decades .

The freeway is credited with enhancing Colorado 's ski industry . The ski resort town of Vail did not exist until I @-@ 70 began construction , with developers working in close partnership with the Department of Transportation . By 1984 , the I @-@ 70 corridor between Denver and Grand Junction contained the largest concentration of ski resorts in the United States . The towns and cities along the corridor have experienced significant growth , luring recreational visitors from the Denver area . As one conservationist lamented , I @-@ 70 " changed rural Colorado into non @-@ rural Colorado " .

One accident at the Mousetrap , a complex interchange , had national ramifications . On August 1 , 1984 , a truck carrying six torpedoes for the U.S. Navy overturned . The situation was made worse as no one answered at the phone number provided with the cargo , and an unknown liquid was leaking from one of the torpedoes . It took more than three hours before any military personnel arrived on the scene , U.S. Army personnel from a nearby base . The incident left thousands of cars stranded and Denver 's transportation network paralyzed for about eight hours . Approximately 50 residents in the area were evacuated . Investigations later revealed that the truck driver did not follow a recommended route provided by officers , and was specifically warned to avoid the Mousetrap . The Navy promised reforms after being criticized for providing an unstaffed phone number with a hazardous cargo shipment , a violation of federal law , and failing to notify Denver officials about the shipment . The Mousetrap was grandfathered into the Interstate Highway system , with some structures built in 1951 . The incident provided momentum to rebuild the interchange with a more modern and safer design . Construction began in several phases in 1987 and the last bridge was dedicated in 2003 .

In 2014 , mile marker 420 was altered by CDOT to read " Mile 419 @. @ 99 " following repeat thefts of the original sign due to the significance of the number 420 in cannabis culture .

= = Exit list = =