

## 省级轨道交通责任主体不可或缺

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2021年4月19日,国家发展和改革委员会新闻发言人在发布会上指出:我国将强化对铁路规划的引导和约束作用,明确国家级中长期、五年发展规划和区域性铁路发展规划体系,规范城际、市域(郊)铁路发展。

我国轨道交通可以粗分为3张网:国家干线铁路网、地方铁路(区域铁路)网和城市轨道交通网;也可以按目前的管理体制与技术制式细分为4张网:国家干线铁路网、地方铁路(区域铁路)网、大城市内的市域(郊)铁路网和城市轨道交通网。两种层次分析的区别在于:在大城市内部再分成市域(郊)铁路网和城市轨道交通网两个层次;前者是交流25 kV供电,其设计运行速度为100~160 km/h,类似干线铁路的技术制式;而后者为直流1 500 V及以下供电,其最高运行速度为80~120 km/h。

在当前的管理体制下,国家干线铁路网与城市轨道交通网的主管部门是明确清晰的,分别是国家铁路集团和市政府所授权的交运集团;而地方铁路(区域铁路)网以及大城市内的市域(郊)铁路网的责任主体却是模糊不清的。

地方铁路(区域铁路)网主要由城际铁路和市域(郊)铁路构成,该网的高质量发展在我国“十四五”规划开启的新发展阶段具有重要意义。当前的地方铁路(区域铁路)与传统意义上的“地方铁路”有很大区别:以前提及的地方铁路其全称为“地方性质铁路”,是指以地方政府部门或企业公司为主要施工建设、运作维护和经营管理单位的铁路系统,不仅数量少、技术标准相对较低,而且大多是支线铁路。而如今的地方铁路(区域铁路)网,将成为省市自治区内部或城市群内部支撑其经济高质量发展、实现其居民高品质生活的公益性、基础性重要交通设施。

2021年2月24日中共中央、国务院印发的《国家综合立体交通网规划纲要》显示,至2035年,我国铁路运营里程将达到20万km左右,其中,高速铁路7万km(含部分城际铁路),普速铁路13万km(含部分市域铁路)。可见,地方铁路(区域铁路)网已成为我国综合立体交通网的重要组成部分。

根据相关文件精神,城际铁路和市郊铁路主要由地方出资。国铁集团现在的关注重点除了川藏铁路、西部陆海新通道等国家干线铁路之外,京津冀等重点城市群内部的重点线路也在国铁集团的关注范围之内。例如,2020年底,京津冀城际铁路投资有限公司已由原来的地方控股改变为国铁集团控股。

那么,主要由地方出资建设的省区内或区域内地方铁路(区域铁路)的责任主体应该是谁呢?根据“生产关系必须与生产力的发展相适应”这一规律,笔者认为:在“十四五”规划开新局之际,应抓住历史机遇,创建更多的省级轨道交通集团公司。这种公司的职能是:引导和规划地方铁路(区域铁路)的发展,并确定其建设标准(如城际列车运量较小,宜采用小编组,这就区别于干线铁路);同时负责投资建设,建成后也由它来经营管理;还应具有相应的话语权,一方面接受授权代表省级政府对上协调与国铁集团的关系,另一方面协调与区域内各个大城市的轨道交通集团的关系,做到4网合一、互联互通、畅通无阻。

为了实现互联互通,在技术制式上可以采用“双流制”列车。“双流制”列车可以接受交流、直流两种不同的供电制式,实现列车在铁路和地铁之间的互联互通;乘客不用换乘就可以坐着“双流制”列车从铁路站上车到地铁站下车,反之亦然。重庆5号线是我国首条以“双流制”列车贯通的轨道交通线路,在中车重庆长客轨道车辆有限公司研制的全国首列“双流制”列车下线后,即将投入市郊铁路与地铁线路之间的贯通运营。

交通运输行业是碳排放的“大户”,占全国终端碳排放量的15%。据测算,最近9年,交通运输业碳排放量的年平均增速在5%以上,已成为温室气体排放增长最快的领域之一;而其中,全社会公路交通的碳排放量占交通运输行业碳排放总量的比例高达70%~80%。通过地方铁路(区域铁路)的高质量发展,改变广大居民的出行方式,减少公路交通的占比,十分有利于实现《国家综合立体交通网规划纲要》提出的目标,即加快推进绿色低碳发展,交通领域二氧化碳排放尽早达峰。

万事俱备,只欠东风。省级轨道交通责任主体不可或缺,期待有更多省市自治区创建省级轨道交通集团公司。

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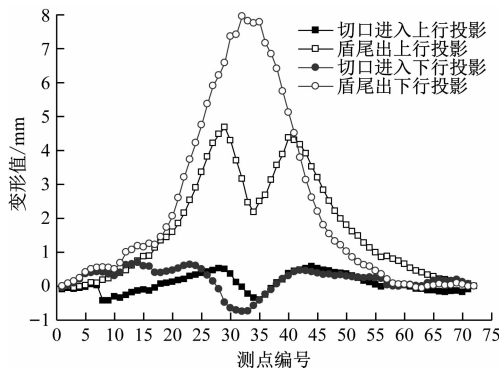


图4 隧道变形曲线

## 5 结论

1) 采取“连续快速”的穿越策略是正确的,并充分利用双休日的节点,最大限度地减小了盾构穿越施工对地铁运营的影响;

2) 采用自动化监测、人工监测、视频监控相结合的监测方案,实现了信息化施工,为有效分析和评估地铁隧道结构安全提供了重要保障;

3) 确定合理的变形控制标准,制定有针对性的应急方案和全方位的运营调整预案,形成有效的联合值班制度等一系列的监护措施,共同保障了盾构的成功穿越。

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(Continued from Commentary)

## Commentary

# Indispensable Role of Provincial Rail Transit Responsible Party

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On 19<sup>th</sup> April 2021, the news spokesman of National Development and Reform Commission stated in the press conference that China will strengthen the guiding and constraining efforts towards railway planning and will formulate the planning of national medium- and long-term and five-year development, as well as regional railway development planning system, to regulate the intercity and suburban railway development.

Rail transit in China can be generally categorized into three networks: national trunk railway network, regional railway network and urban rail transit network; or to be further categorized into four networks from the perspective of current administrative framework and technical formats: national trunk railway network, regional railway network, both suburban railway network and urban rail transit network of big-cities. The difference between the two levels of analysis is whether it is further differentiated between suburban railway network and urban rail transit network inside big-cities; the former one is supplied by AC 25 kV, with designed operating

speed of 100 ~ 160 km/h, close to the technical format of trunk railway; while the latter one is supplied by DC 1 500 V or lower, with the highest operating speed of 80 ~ 120 km/h.

Under current administrative framework, the competent departments of national trunk railway network and urban rail transit network is clearly assigned, which are respectively the China State Railway Group Co. Ltd. (China Railway) and Jiaoyun Groups authorized by municipal governments, whereas the responsible parties for regional railway network and big-city suburban railway network are unclarified.

Regional railway network consists of intercity railway and suburban railway, of which a high-quality development is profoundly significant for breaking new grounds at the beginning of the 'Fourteenth Five-Year Planning'. Current regional railway is extensively different from the conventional definition of 'regional railway'. In the past, regional railway was referring to local railway, which was a railway system directed by local government and enterprises for construction, operation and maintenance, and management. Not only that the amount was small and technical standard was relatively low, but the majority of them were branch lines. On the other hand, the regional railway network nowadays is fundamental infrastructure for public welfare at scale of province, autonomous regions and urban clusters, supporting the sophisticated development of economy and realizing high-quality living standard for residents.

According to the 'National Comprehensive Three-dimensional Transportation Network Planning Outline' issued by the Central Committee of the Communist Party of China and the State Council on 24<sup>th</sup> February 2021, by 2035, the operating mileage of railway in China will add up to 200 000 km, of which 70 000 km is high-speed railway (partially including intercity railway), and 130 000 km is general-speed railway (partially including intercity railway). Evidently, regional railway network has become an important component of the comprehensive three-dimensional transportation network in China.

In keeping with relevant documents, intercity railway and suburban railway are mainly financially invested by local entities. China Railway has now extended focus from national trunk railway such as Sichuan-Tibet railway, New Land and Marine Routes for Western Regions, to the major routes inside urban clusters such as Beijing-Tianjin-Hebei circle. As an example, by the end of 2020, the Beijing-Tianjin-Hebei Intercity Railway Investment Co. Ltd. has changed from local entities holding to China Railway holding.

In this case, what party is responsible for the regional railway in provinces or in certain regions that is invested by the local entities? By the law of 'relations of production must adapt to the level of productive forces', it is high time that on this breaking new ground of 'Fourteenth Five-Year Planning', provincial-level rail transit corporate groups should be founded. The functionality of this group is to guide and plan the development of regional railway and to establish construction standards (for example, the small capacity of intercity train requires small formation, which sets it apart from trunk railway); to be responsible for investment, construction, as well as operation and management after construction completed; to own commensurate power of discourse, in that on one side to communicate with China Railway with authorization from local government, on the other side to coordinate relationship among rail transit corporate groups from every big cities in the region, accomplishing the unification of four networks, interoperation and smooth exchange flow.

To realize interoperation, 'dual-current format' train can be adopted from technical format perspective. The 'dual-current format' train accepts both AC and DC as power supply format, realizing the interoperation between railway and metro; passengers can board on railway station and get off at metro station without the necessity of interchange when traveling on 'dual-current format' train, vice versa. Chongqing Metro Line 5 is the first rail transit line where 'dual-current format' train is running through in China. When the first 'dual-current format' train developed and manufactured by CRRC Chongqing Railway Vehicles Co. Ltd. goes off-line, it will be launched for the run-through service of suburban railway and metro lines.

Transportation industry is responsible for massive carbon emission, taking up 15% of national terminal carbon footprint. By estimation, in the past 9 years, the average annual growth rate of rail transit industry carbon footprint has been above 5%, making it one of the fields with the highest greenhouse gas emission growth rate, among which the carbon footprint of social road traffic takes up to 70% ~ 80% of the whole transportation industry carbon footprint. Through high-quality development of regional railway, by changing passenger traveling patterns and reducing the proportion of road traffic, it is promising to achieve the goals proposed in 'National Comprehensive Three-dimensional Transportation Network Outline', that is to advocate green and low-carbon development and to peak carbon dioxide emission of transportation industry as soon as possible.

All is ready except for the window of opportunity. Provincial rail transit responsible party is an indispensable role. Looking forward to more provincial-level rail transit corporate groups being founded in provinces, municipalities and autonomous regions.

Translated by ZHANG Liman