

APPROACHING ROAD-CUTTINGS AS INSTRUMENTS OF EARLY URBANIZATION IN CENTRAL TYRRHENIAN ITALY

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The landscape of central Tyrrhenian Italy became increasingly engraved with roads cut deep in the ground in the course of the seventh and sixth centuries BC. This development was mainly for pragmatic reasons, such as the need for better infrastructure and transport facilities resulting from increased vehicular traffic between and within regions. In addition to providing logistic benefits, road-cuttings also contributed to developing the socio-political aspects of the proto-urban centres of central Italy through their monumentality, which arguably was utilized in politicizing territorial landscapes as well as in enhancing funerary rituals. In this paper I shall examine road-cuttings as instruments of urbanization in iron age and Archaic central Italy by attempting to present a point of view in which the road-cuttings in central Italy are seen not only as pragmatic facilities, but also as building blocks of landscapes of power and identity. This goal is approached by using the methods of landscape archaeology and phenomenology in a study of 110 road-cuttings from central Italy and assessing their relations to their physical surroundings.

Nel corso del VII e VI secolo a.C. il paesaggio dell'Italia centrale tirrenica diviene sempre più caratterizzato da strade tagliate profondamente nel banco roccioso. Questo sviluppo è dovuto principalmente a ragioni pratiche, quali la necessità di infrastrutture migliori e capacità di trasporto a seguito di un aumentato traffico veicolare tra le regioni e al loro interno. Oltre a fornire benefici logistici, le tagliate viarie hanno anche contribuito a sviluppare aspetti socio-politici dei centri protourbani dell'Italia centrale attraverso la loro monumentalità, che verosimilmente venne utilizzata sia per 'politicizzare' i paesaggi sia in funzione dei rituali funerari. In questo articolo vengono esaminate le tagliate viarie come strumento di urbanizzazione nell'Italia centrale dell'età del ferro e del periodo arcaico, tentando di presentare un punto di vista secondo il quale le tagliate viarie nell'Italia centrale sono viste non solo come strutture pragmatiche, ma anche come tasselli costitutivi del paesaggio, del sistema di potere e di identità. L'obiettivo è perseguito attraverso la metodologia dell'archeologia dei paesaggi e della loro fenomenologia con uno studio di 110 tagliate viarie dell'area centrale della penisola italiana, tenendo in considerazione le loro relazioni con il contesto fisico.

INTRODUCTION

The friable volcanic tuff characteristic of the landscape of central Tyrrhenian Italy became comprehensively engraved with roads cut into the hills during the seventh and sixth centuries BC, primarily as a response to the expanding needs of increasing vehicular traffic. Although well-known in Italian

archaeology,¹ road-cuttings have never been evaluated fully as archaeological documents: it can be presumed that, as part of the developing urbanization in iron age central Italy, affected by the formation of proto-urban centres, the ruling élite of the centres aspired to establish territories and build infrastructure in order to utilize available resources and exert political control over them. In addition to the logistic benefits of road-cuttings, their monumental aspects in relation to their surroundings could provide a useful tool for creating a political landscape embedded with messages of the local élite concerning their ownership of the land and the resources. This supposed intangible structure encoded within the landscape arguably can be approached and identified via methods of landscape archaeology and phenomenology (for example: Tilley, 1994); thus, it is my contention that road-cuttings, when regarded as time- and resource-consuming monumental constructions in territorial landscapes of early urbanized societies, can provide new insights into the development and employment of material and social infrastructures in central Italy during the Orientalizing and Archaic periods.

The geographical area considered here consists primarily of southern Etruria — limited by the Fiora and Paglia rivers in the west and north —, in addition to Latium Vetus (Fig. 1). Road-cuttings are abundant on the tuff plateau of southern Etruria,² and several examples can also be found around proto-urban³ centres in Latium.⁴ The majority of the road-cuttings discussed in

¹ Several examples are mentioned by George Dennis in his 1848 study of Etruria, *The Cities and Cemeteries of Etruria*. Road-cuttings feature abundantly also in the surveys conducted by Gian Francesco Gamurrini, Adolfo Cozza, Angiolo Pasqui and Raniero Mengarelli in 1881–97, published in *Carta Archeologica d'Italia* (1972; 1981). More recent topographical studies consist of the extensive South Etruria Survey carried out by the British School at Rome, published in several articles in *Papers of the British School at Rome* (for example: Ward-Perkins, 1955; Frederiksen and Ward-Perkins, 1957; Duncan and Reynolds, 1958; Ward-Perkins, 1961; Jones, 1962; Ogilvie, 1965; Kahane, Murray Threipland and Ward-Perkins, 1968; Hemphill, 1975), and later surveys published in the *Forma Italiae* series (Quilici Gigli, 1970; Morselli, 1980; Tartara, 1999). Other notable publications of local surveys are: Quilici Gigli, 1976 (Blera); Hemphill, 2000 (Civitella Cesi); Enei, 2001 (*Ager Caeretanus*). For work specifically on road-cuttings, see: Ward-Perkins, 1957; Ward-Perkins, 1962a; Ward-Perkins, 1962b; Potter, 1979; Boitani *et al.*, 1985; Quilici, 1989; Quilici, 1990; Quilici, 1992; Quilici, 2008; Tuppi, 2010; Tuppi, 2012. For Etruscan rock-cut architecture, see: Prayon, 1975; Colonna, 1986; Naso, 1996: these works deal comprehensively with the utilization of stone cutting and quarrying in construction.

² For example: Gamurrini *et al.*, 1972; Cozza and Pasqui, 1981; also Potter, 1979: 79–84; Colonna, 1986: 432, fig. 293.

³ Following Francesco di Gennaro's terminology (Cardarelli and di Gennaro, 1996: 262), the term 'proto-urban' is used in this paper to define early Italian settlements that show a remarkable change in size and influence in comparison to the preceding phase, and continue to exhibit consistent urban development in the subsequent historical period; cf. Peroni, 2000: 26.

⁴ For instance, Robert Ogilvie reported several road-cuttings in the vicinity of Archaic *Eretum* (1965: 73–4, 84, 88–9, 91, pl. XVII; see also the list of sites for nos. 54, 63 and 78–9) (see also: Quilici Gigli and Santoro, 1995: 660). Ancient *Fidenae* also had road-cuttings crossing the settlement area similar to *Crustumerium* (Quilici and Quilici Gigli, 1986: 117, 226–7, 240, 349–50, pls XX–XXI), as did the settlement of *Gabii*, east of Rome (Gwaitoli, 1981: 49, figs 17d and

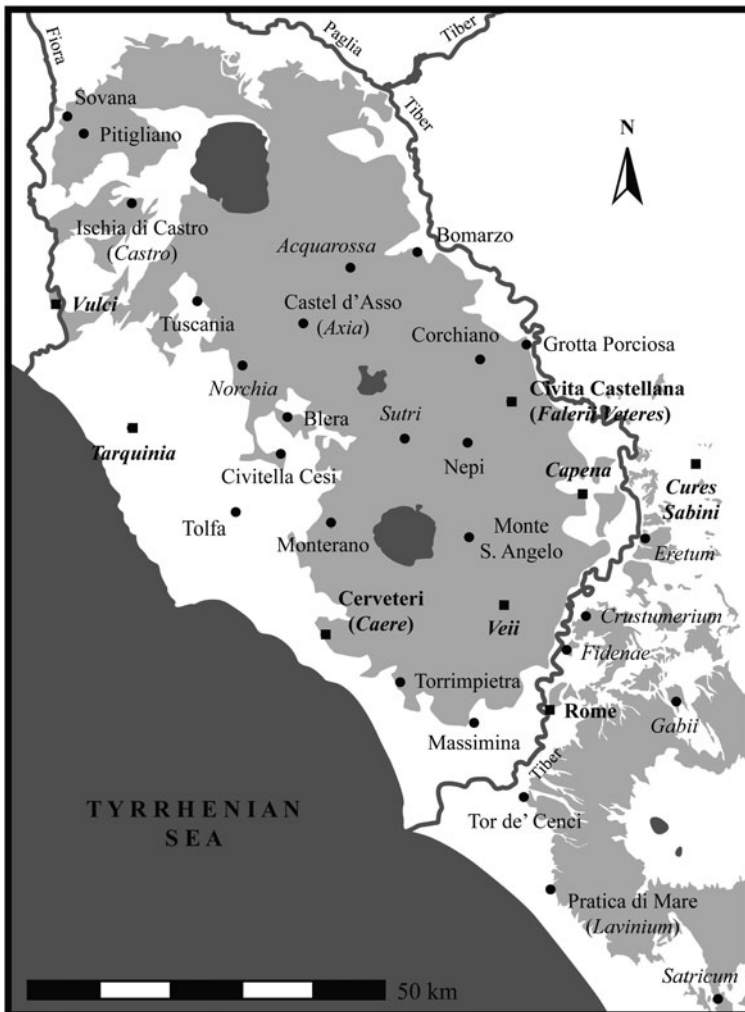


Fig. 1. The tuff plateau of central Tyrrhenian Italy and locations mentioned in the text. (Map: author.)

this paper comes from Etruscan sites or the surrounding areas: a clear network of road-cuttings can be seen spreading out, for example, around the Etruscan centres at Tuscania (Quilici Gigli, 1970), Blera (Quilici Gigli, 1976) and Cerveteri (Enei, 2001) (Figs 2–4). However, contemporaneous infrastructural development comparable to the progress witnessed in Etruscan territories is apparent also at

24). Marijke Gnade (2007) also has reported on a possible road-cutting pertaining to the Archaic period in *Satricum*, southern Latium. For examples of other Archaic road-cuttings documented in the territory of Rome, see, for example: Rossi and Iorio, 2009: 561–2 (for the Massimina road cutting). Lastly, it should be noted that road-cuttings were by no means limited to the area under scrutiny in this paper: for instance, Archaic *Cures Sabini* in the Sabine region also had multiple road-cuttings in its vicinity (for example: Bistolfi and Guidi, 1995).

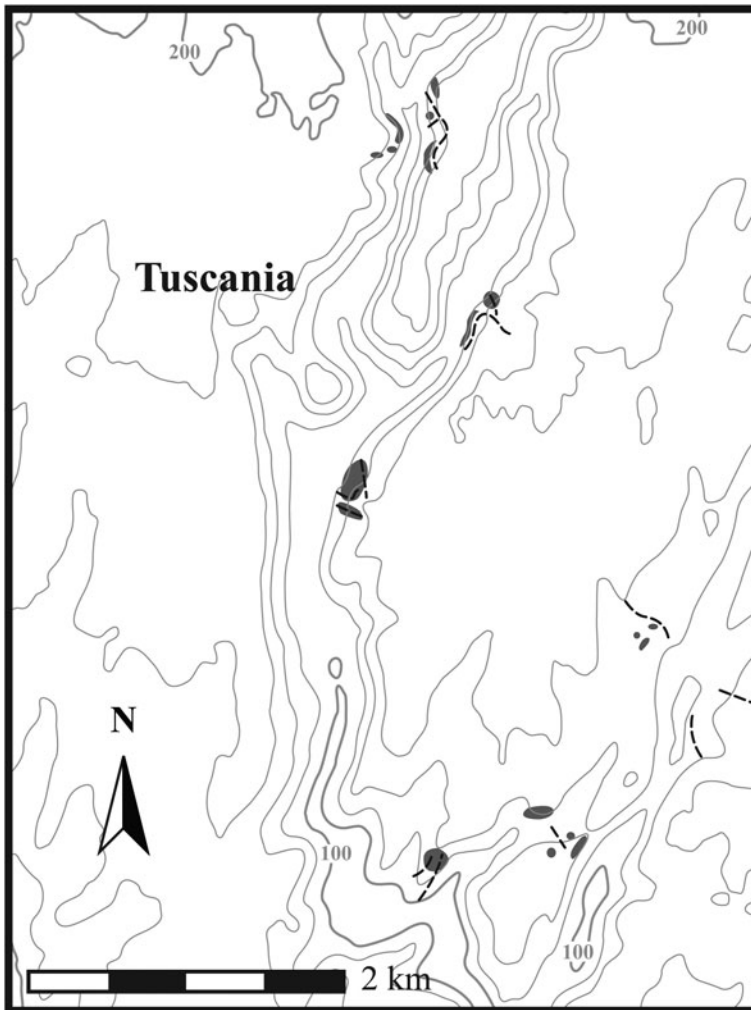


Fig. 2. Road-cuttings (dashed lines) and burials (dark grey) around Tuscania. (Map: author.)

Crustumerium in the Tiber valley, Lazio, for instance. Furthermore, the earliest road-cuttings suitable for wheeled traffic that the author is aware of date to the (late?) eighth century BC, and are found in southern Etruria and Latium alike.⁵

Although the cuttings discussed in this paper (listed in the Appendix) are only a portion of the total number of road-cuttings in central Italy,⁶ they should be considered sufficient for the purposes of this study, as the existing published

⁵ In southern Etruria: Poggio Buco road-cutting at Pitigliano (Feo, 2011: 136) and the Cava di Castro cutting near Ischia di Castro (Rendeli, 1993: 387–8, fig. 77, no. 2); in Latium, the Tor de' Cenci road-cutting south of Rome (Bedini, 1990; Quilici, 1992: 20, fig. 2; Damiani and Pacciarelli, 2006: 524–8), which presumably marked an important *compitum* already in the Early Iron Age.

⁶ See, for example: Gamurrini *et al.*, 1972; Cozza and Pasqui, 1981.

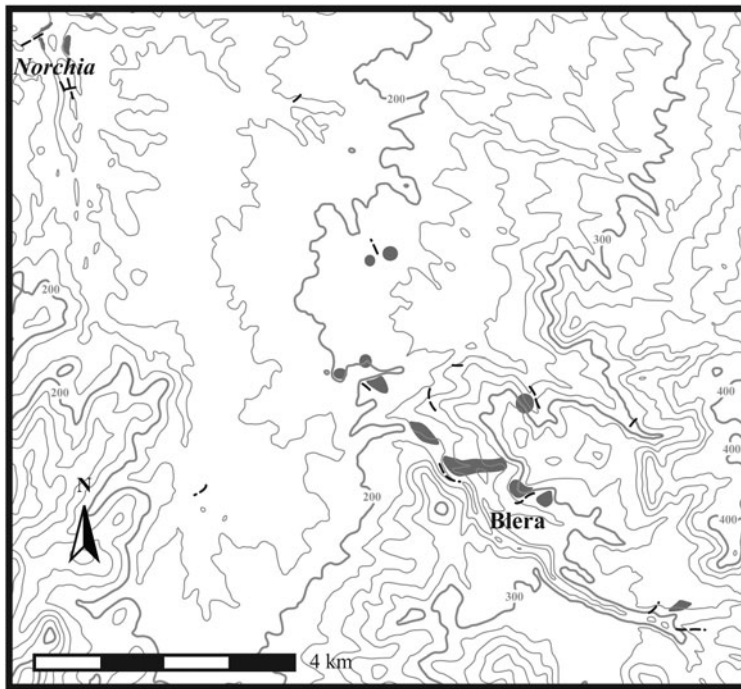


Fig. 3. Road-cuttings (dashed lines) and burials (dark grey) around Blera and Norchia. (Map: author.)

research dealing with road-cuttings is sporadic at best. On a further note, a scrutiny of the topographical maps of the region suggests that several archaeological sites may contain unpublished — and perhaps even unidentified and/or undiscovered⁷ — road-cuttings in their vicinity. While this paper draws mainly from the published data on cuttings, our understanding of the different aspects of early urbanization in central Italy definitely would benefit from a comprehensive reconstruction of the general utilization of road-cuttings.

METHODOLOGICAL ISSUES

As most of the road-cuttings have been utilized from antiquity to modern times, and often have had several different phases of use and modifications, creating a

⁷ Considering the effects of erosion, landslides and soil sedimentation on road-cuttings, distinguishing between natural and artificial depressions in the landscape during surveys may prove challenging at times. Excavations at the *trincea viaria* cutting at *Crustumarium* (for example: Jarva *et al.*, 2013: 39) show that road-cuttings may have been filled — deliberately or naturally — with soil in the course of history, thus rendering them nearly or completely invisible in the landscape: for instance, the locations of other possible road-cuttings at *Crustumarium*, such as those revealed in a magnetic survey conducted by the research team from the University of Groningen in 2011, are observable on the surface only as gentle, nondescript depressions at best.

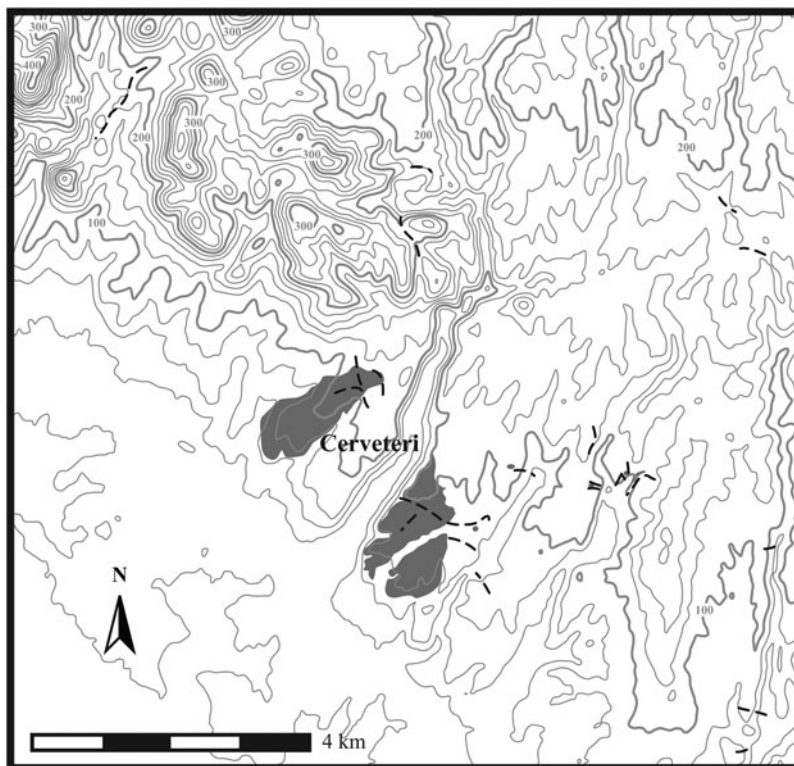


Fig. 4. Road-cuttings (dashed lines) and burials (dark grey) around Cerveteri. (*Map: author.*)

precise chronology for the cuttings is very challenging. Thus, each cutting should be considered as a unique archaeological and topographical document; however, as the primary aim of this paper is to posit the benefits of the post-processual approach in determining the utilization of road-cuttings in the construction and maintenance of socio-political structures, road-cuttings are inspected here as a general phenomenon related to early urbanization. For the same reason, I have not attempted to examine the relation of road-cuttings to the road system in general here, as that topic merits a paper in its own right.

Regarding the topic of road-cuttings as instruments of urbanization in central Tyrrhenian Italy, the issue of Tarquinia and *Vulci* should be addressed. The archaeological and written record of antiquity places these two Etruscan centres among the greatest and most influential in southern Etruria. Nevertheless, there is next to no evidence of road-cuttings at Tarquinia or *Vulci*, for which reason these centres are omitted from this study. Both centres clearly exhibit all the signs of affluence, commercial connections and urbanization, not to mention the display of status and wealth in the burials,⁸ so, why no road-cuttings?

⁸ See: Rasmussen, 2005: 75–6; Ceci and Costantini, 2008: 168–73, 175–89 (on Tarquinia and the latter also on *Vulci* (pp. 190, 199–204)).

Concerning Tarquinia, a very pragmatic reason for the absence of cuttings may be found in its geomorphological situation: the Tyrrhenian coastal area lies outside the vast tuff plateau of central Italy (Ward-Perkins, 1962b: 390; Perkins, 1999: 4, fig. 1.1.1), the presence of which appears to have favoured the construction of road-cuttings and rock-cut tombs (Oleson, 1976: 209; 1978: 285–6).⁹ Furthermore, as the traffic in the coastal region did not face similar obstacles as in the ravine-scarred inland, there simply may not have been a need for monumental logistic facilities such as road-cuttings. The same reasons concerning the need for road-cuttings are applicable to *Vulci* as well (Moretti Sgubini, 1993: 10). In addition to the already cited factors, low-lying coastal areas in general may have been conceived spatially more easily than the volcanic districts due to their more extensive unhindered visibility, thus favouring, in terms of stratigraphy, *positive* monumental reminders of territory¹⁰ such as the Doganaccia tumuli at Tarquinia (Cataldi and Mandolesi, 2010), which stand out from the landscape, instead of *negative* features such as road-cuttings. The lack of road-cuttings in this region thus can be seen to demonstrate how local geology and topography factor in to as well as predetermine the methods of manifesting territorial identity, control and/or power.

In inland southern Etruria the difficult terrain and excessive level variations basically presented two choices: either climb to higher ground to escape vegetation and gain better visibility — a difficult feat for wheeled traffic —, or travel via the extant roads that ran through cuttings specifically quarried to mitigate the challenges of the terrain. The cuttings did not materialize out of nowhere: they were artificial facilities constructed by societies with the capability and resources to improve the infrastructures of their territory.¹¹

SOCIO-POLITICAL BACKGROUND

Current research agrees in general that the earliest proto-urban centres in central Tyrrhenian Italy came into being during the ninth century BC,¹² although the

⁹ See also: Judson and Kahane, 1963: 76, fig. 1.

¹⁰ The utilization of sanctuaries in demarcating territorial frontiers and creating ritual landscapes between *Caere*, Tarquinia and *Veii* at least from the end of the sixth century BC onwards has been discussed and demonstrated by various scholars (see, for example: Zifferero, 2002; Blake, 2005: 116; Edlund-Berry, 2006: 120–1, 123–6; Cifani, 2012: 156).

¹¹ See also: Judson and Kahane, 1963; Kahane, Murray Threipland and Ward-Perkins, 1968: 71; Potter, 1979: 83–7; Cifani, 2003: 189–90; Rasmussen, 2005: 84–6 (on the systematic construction of cuniculi in the Archaic period).

¹² For Tyrrhenian Italy, see: Guidi, 1998: 146; di Gennaro, 2000: 97; Attema, Burgers and van Leusen, 2010: 113; Bartoloni, 2012: 88–93; Bourdin, 2012: 147. It should be noted that this date is not without exceptions: for instance, Marco Pacciarelli (2001) proposed the end of the tenth century BC as a starting-point for Tarquinia and *Vulci* (see also: Guidi, 2008: 175–7), and current research attests early development already in the Final Bronze Age at *Lavinium* (modern Pratica di Mare, south of Rome) (for example: Guidi, 1998: 145); cf. Marco Rendeli (1993), who

process of state formation in southern Etruria took a slightly different course to that in Latium,¹³ with the exception of Rome.¹⁴ In Etruria, the preceding proto-villanovan population that lived in comparatively small (*c.* 2–6 ha) settlements, numbering over 70 known sites (di Gennaro, 2000: 105–6, fig. 5), formed nucleated proto-urban centres that developed into great (average size clearly over 100 ha) Etruscan city-states such as *Veii*, *Caere*, *Tarquini*a and *Vulci*.¹⁵ This development appears to suggest (low-level?) centralized leadership already in the preceding final bronze age settlements,¹⁶ as it seems doubtful that a coordinated nucleation process on this scale could have taken place within more ‘democratic’ societies (Guidi, 1998: 146–7; 2008; cf. Peroni, 1989; 1996). The respective leading groups or families presumably evolved into a dominant class in the newly-founded centres (for example: Guidi, 2008: 184, 187); their élite status in southern Etruria is manifested in the archaeological record, for instance as tumulus burials (Cataldi and Mandolesi, 2010; Bietti Sestieri, 2012: 293, fig. 27) and in exquisite bronze artefacts (for example: Maggiani, 1997: 439–43, figs 2, 6–7; Haynes, 2000: 12–13) dating no later than the eighth century BC (Barker and Rasmussen, 1998: 77–9).¹⁷ The families of the ruling élite clearly achieved aristocratic status during that time (Cifani, 2002a: 220; Bartoloni, 2003; Bartoloni, 2012: 103–4):¹⁸ the increased importance of family names (as well as literacy as a signifier of status) can be witnessed in the inscriptions found in the seventh-century élite burials.¹⁹ The archaeological record shows the emergence of secondary centres in southern Etruria during the eighth and seventh centuries BC, presumably controlled by an aristocracy (for example: Cifani, 2002b: 247–8; 2003: 182).

attributed the formation of Etruscan centres only after the Early Iron Age, based in general on the archaeological evidence for urban and societal development pertaining to the Orientalizing and Archaic periods.

¹³ For Latium, see: Bietti Sestieri and De Santis, 1985: 35; Guidi, 1998: 144–5; Cifani, 2002a: 220; Fulminante, 2012: 4.

¹⁴ For Rome, see: Bietti Sestieri, 1992: 239; Guidi, 1998: 145; Guidi, 2000: 87; Cifani, 2003: 183; Bietti Sestieri, 2012: 277; Fulminante, 2012: 4; see also: Carandini, 1997.

¹⁵ For Etruria, see: di Gennaro, 1982; Bietti Sestieri, 1997; Barker and Rasmussen, 1998: 60–1; di Gennaro, 2000: 108–9; Cifani, 2002a: 220; Cifani, 2003: 178–9; Guidi, 2008: 176; Fulminante, 2012: 4.

¹⁶ See, for example: Barker and Rasmussen, 1998: 53; Guidi, 2008: 177. Inhumation burials within stone circles pertaining to the Final Bronze Age discovered in Celano Paludi at L’Aquila *c.* 90 km northeast of Rome (Bietti Sestieri, 2012: 289–90, fig. 25) imply special status, and support the presumption of the development of social inequality also in the proto-villanovan societies in Etruria. See also: Haynes, 2000: 14–15; Peroni, 2000: 28; cf. Colin Renfrew and Paul Bahn (2008: 203) on the Quanterness chamber-tomb on the Orkney Islands.

¹⁷ Around this point in time, central Italy may have witnessed also the emergence of territorial/ethnic identity (Cifani, 2003: 185–6; Guidi, 2008: 187; Togninelli, 2009: 17–18; Camporeale, 2010: 10; Bourdin, 2012: 143, n. 649).

¹⁸ See also: Bourdin, 2012: 62.

¹⁹ For these inscriptions, see: Colonna, 1977: 186–8; Haynes, 2000: 65, 70–1; Cifani, 2003: 182; Rasmussen, 2005: 83; Bonfante, 2006: 9; Cerchiai, 2012: 140–1; Bourdin, 2012: 110; see also: Carlucci *et al.*, 2007: 44; Aigner Foresti, 2009.

In Latium, the proto-urban centres were born through gradual local development²⁰ rather than through rapid nucleation of small settlements on previously uninhabited locations, with the above-mentioned exception of Rome. This resulted in generally smaller centres and territories in comparison to the centres in southern Etruria.²¹ The development of social stratification in Latium also appears to have begun before the rise of the proto-urban centres: for example, the early iron age burials in the Osteria dell’Osa necropolis have been interpreted as evidence of early political/military and religious leadership (Bietti Sestieri, 2012: 278–9).²² Rich burials and luxury items (Bartoloni, 2010: 160–1; Attema *et al.*, 2013) demonstrate the rise of an aristocracy in the seventh century BC in Latium as well (Cornell, 1995: 84–5; Cifani, 2002b: 247–8; Bartoloni, 2003; Fulminante, 2003), but if we consider the putative models of centre formation and territorial organization in Latium as representative of the underlying societal structures, the elite status and centre hierarchy may have been less accentuated in Latium than in Etruria (for example: Cifani, 2002a: 220–1; 2003: 191–3). The moderating effect of the rising ‘middle class’ of craftsmen and traders on the socio-political power of the aristocracy (Cifani, 2003: 186)²³ in the sixth and fifth centuries BC appears to be most evident in the great Etruscan centres and Rome,²⁴ but is visible also in the marked decrease of luxury burials in the course of the sixth century (Cornell, 1995: 105–8 (with references); Bartoloni, Nizzo and Taloni, 2009).

Admittedly, the above descriptions concerning the Iron Age are somewhat generalized, but they do give a broad (and brief) view of the relevant socio-political developments: it should be remembered that at that time the local cultures were clearly differentiated in Etruria and Latium (for example: Cornell, 1995: 32–6). To summarize the situation during the seventh and sixth centuries BC in general terms, central Tyrrhenian Italy consisted of medium- to large-sized territorial city-states at an advanced stage of urban development controlled by an aristocratic elite. Political control of territory was essential not only for effective exploitation of the resources the territory held (water, wood, ore, stone, labour and so on), but also for the efficient maintenance of the agricultural economy and connections to other centres, and for the presumed imposition of tolls. To this end, monumental tumuli and infrastructure features in the form of road networks and road-cuttings can be considered to denote the

²⁰ For discussion of this local development, see: Bietti Sestieri and De Santis, 1985: 35; Cifani, 2002a: 220–1, 225; Attema, Burgers and van Leusen, 2010: 113, 116–17; see also: Bourdin, 2012: 147.

²¹ See: Pacciarelli, 2001: 120–36, figs 69–70; Cifani, 2002a: 220–1; Cifani, 2003: 183; Guidi, 2008: 179; Attema, Burgers and van Leusen, 2010: 113; Amoroso, 2013: 132, figs 4–5.

²² See also: Barker and Rasmussen, 1998: 72–3; Bourdin, 2012: 147.

²³ See also: Rasmussen, 2005: 84 (with references).

²⁴ For the Etruscan centres, see: Kahane, Murray Threipland and Ward-Perkins, 1968: 69–71; Cifani, 2002a: 221–5; Cifani, 2003: 194; Cerchiai, 2012: 152–3. For Rome, see: Bartoloni, 2010: 164; see also Livy (1.59–60) on the expulsion of the Etruscan royalty and the foundation of the Roman Republic at the beginning of the fifth century BC.

aristocracy's control over the land (Zifferero, 1991); the increasing significance of terrestrial communications is evident also in the recent results of social network analysis concerning Latium Vetus conducted by Francesca Fulminante (2012). Furthermore, it is possible that the distribution of road-cuttings (that is, apparently favouring southern Etruria instead of Latium) also stems from the respective socio-political situations: in comparison to southern Etruria, which had a small number of grand early urban centres with large territories in the eighth/seventh century BC, Latium exhibited mostly smaller centres with corresponding territories, meaning that competition over resources and land was probably more vigorous in Latium than in southern Etruria. In this sense, the Etruscans could invest more in improving territorial infrastructures instead of raising defences,²⁵ whereas there is evidence of early fortifications at most centres in Latium (for example: Fischer-Hansen and Algreen-Ussing, 2013: 51–8 (with references)).

LOGISTIC BENEFITS

The most obvious function of road-cuttings was to facilitate sufficient mobility in a difficult terrain riddled with valleys, gorges and ravines by providing ramps and passages with gentle slopes (for example: Barker and Rasmussen, 1998: 172). As in the sixth century BC the Mediterranean region experienced a notable population increase (Cifani, 2002b), which catalysed architectural development (di Gennaro, 2007; Colantoni, 2012: 21, 24–5, 32–3), mobility²⁶ as well as commercial connections (Cifani, 2003: 185, 190), subsequently leading to the widespread adoption of wheeled vehicles,²⁷ ramps with suitable grades for wheeled vehicles laden with heavy loads of goods²⁸ or construction materials²⁹ became a

²⁵ That is not to say there is no evidence of early fortifications in southern Etruria: see, for instance: on Tarquinia — Baratti, Cataldi and Mordeglia, 2008; on Veii — Boitani, 2008; Bartoloni, 2009: 8; on Vulci — Moretti Sgubini, 2008.

²⁶ The developments in organized transport in the sixth century BC are apparent also in the evidence of maritime and fluvial emporia such as *Gravisca*, *Pyrgi* and *Forum Boarium* in Rome (for example: Cornell, 1995: 109–12). In addition, the number of pebbled roads increased in the *ager Romanus antiquus* at that time (Cifani, 2008: 305–7 with references). See also the account by Livy (1.34) of Lucumo's journey by wagon from Tarquinia to Rome in the late seventh century BC.

²⁷ On wheeled vehicles, see: Potter, 1979: 79–81; Piggott, 1983: 138; Pisani Sartorio, 1988: 43; Colonna, 1999: 15; Tuppi, 2010: 265–6; see also: Emiliozzi, 1999.

²⁸ Concerning maximum loads transported by wagons, the *Codex Theodosianus* (8.5.17) states a restriction of one thousand *librae* (c. 330 kg), whereas carts (8.5.47) were allowed only 600 *librae* (c. 198 kg); see also: Mitchell, 1976: 122–3; Pisani Sartorio, 1988: 16, 59, 68 (on maximum loads and Xenophon's *Cyropaedia* (6.1.52–4) for an account of Cyrus the Great utilizing eight yoke of oxen in the mobilization of a siege tower, where he quotes 25 [Attic] *tálanta* (c. 655 kg) as the usual load for one yoke). For estimations of the efficiency of mules, oxen and other beasts of burden, see, for example: White, 1984: 127–32; Raepsaet, 2008.

²⁹ On sixth-century BC Greece, see: Burford, 1960: 3.

necessity at settlements, founded typically on hilltops for defensive purposes, as well as in the surrounding territories.³⁰ The roads were cut into the tuff presumably using quarrying methods and tools, and, on several occasions, refurbished when necessary.³¹ Marks left by pickaxes often are still visible on the walls of road-cuttings. Considering the notable depths commonly witnessed in road-cuttings (from 5 m to over 20 m), special attention apparently was given also to the gradient of the road, which in the case of Roman roads is commonly *c.* 7–10% and seldom more than 15%; some roads with earlier origins exhibit grades around 12–19%, which presumably was acceptable for regular traffic during the Archaic period in central Italy.³² The gentler slope of the Roman roads suggests that the grade was later adopted to handle the more demanding traffic of Republican, and subsequently Imperial, Rome.³³

TRAFFIC CONTROL

As stated above, in order to achieve a suitable grade for wheeled traffic, a road often had to be quarried deep into the hillside. In many cases the walls of a road cutting are several metres high, creating a narrow corridor that restricts mobility, particularly for carts and wagons. Considering that most of the wheeled vehicles had gauges around 1.3–1.4 m (Tuppi, 2010; Crouwel, 2012: 2)³⁴ and that *c.* 63% of the 110 road-cuttings discussed in this paper are less than 3 m wide, thus hampering simultaneous two-way vehicular traffic,³⁵ this feature enabled the secondary function of controlling the traffic, especially at cities and centres. The influx of traffic thus could be regulated efficiently where necessary by directing it via road-cuttings: constructions interpretable as deliberate bottleneck arrangements can be found at the Castelluzza cutting at

³⁰ For a general overview of Etruscan urbanization and road network development, see, for example: Colonna, 1986.

³¹ For details of the quarrying methods and tools, see: Ward-Perkins, 1973: 138–43; Oleson, 1978: 292–4, 303; di Gennaro, 2007: 172; Cifani, 2008: 240–1, figs 225–6; see also: Gaitzsch, 1980: 90, 93–6, pl. 8, nos. 36–8; DeLaine, 1997: 110. For examples of refurbishment, see, for example: Frederiksen and Ward-Perkins, 1957: 186; Ward-Perkins, 1957: 140; Potter, 1979: 83.

³² For the gradient of roads, see, for example: Frederiksen and Ward-Perkins, 1957: 90; Hemphill, 1975: 125; Potter, 1979: 79–83. For the usual range of measurements: Lafon, 1979: 405; Mollo Mezzena, 1992: 57. For the gradients of some early roads, see: Colonna di Paolo and Colonna, 1978: 62; De Ruyt, 1978: 39; Quilici, 1989: 495, 497; Quilici, 1990: 200, 212, 219; Scardozi, 2007: 26; Quilici, 2008: 562; cf. Kahane, Murray Threipland and Ward-Perkins, 1968: 41.

³³ According to archaeological evidence, central Italy apparently underwent infrastructural renovations concerning road systems during the second century BC: Giuliani, 1966: 8–12; De Ruyt, 1978: 39; Di Stefano Manzella, 1996: 223–4; Scardozi, 2007: 22–3; see also Forbes, 1965: 156.

³⁴ On ancient wheel-ruts, see: Forbes, 1965: 136, 142–3; and on Roman vehicles in general: Pisani Sartorio, 1988: 11, 54–61.

³⁵ See also: Quilici, 1989: 494–5, fig. 17.1.



Fig. 5. A road-cutting narrowing towards the summit at the Pian della Conserva necropolis, Tolfa. (Photo: author.)

Bomarzo (Scardozi, 2007: 21), the southern entrance of the Etruscan settlement of *Norchia* (Colonna di Paolo and Colonna, 1978: 62–3, pl. LXIX), in the Etruscan necropolis of Pian della Conserva at Tolfa (Naso, 1990: 90; Marconi Cosentino, Gallavotti Cavallero and Aiello, 1995: fig. 62) (Fig. 5), and at the pre-Roman settlement of *Crustumerium* in the Tiber valley (Tuppi *et al.*, forthcoming) (Figs 6–7). It is also possible that, in addition to the benefit of a graded slope, the narrow corridor created by cutting the road into bedrock actually helped carts carrying heavy cargo to stay on the track: to give a Greek example, Robert Forbes (1965: 141–2) wrote about holes along the sides of the Attican quarry roads that may have held poles that prevented wagons with marble loads from veering off the road. Furthermore, based on the observation concerning the implications of the space available for the traffic, we can postulate also that the routes that have the widest road-cuttings were probably the main roads in antiquity, and presumably were constructed to support unhindered heavy two-way traffic: for instance, as one of the widest road-cuttings at Tuscania (5–7 m wide) is located in the Scalette pass just northeast-east of the centre (Quilici

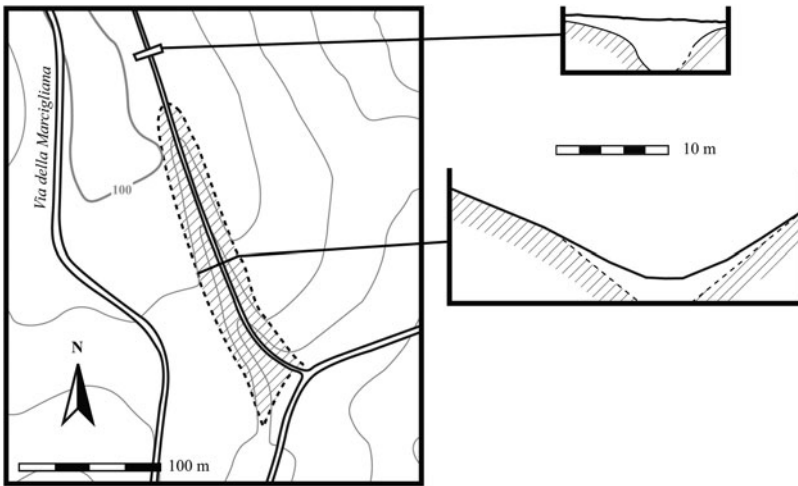


Fig. 6. Estimated sections of the southern *trincea viaria* road-cutting at *Crustumarium* based on excavation data gathered in 2004–8. (See also Fig. 7 for a general plan of the settlement area.) (Illustration: author.)

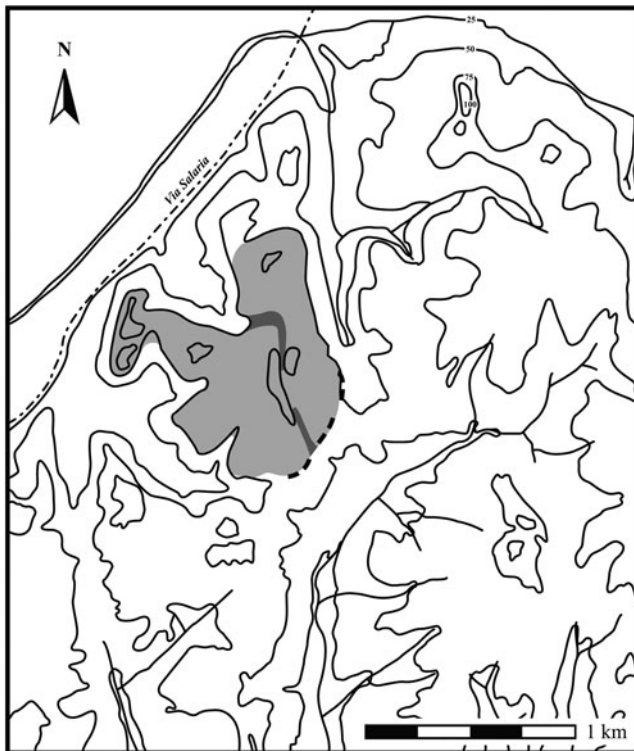


Fig. 7. The settlement area of *Crustumarium* (light grey), *trincea viaria* road-cuttings (dark grey) and the currently known extent of the moat (dashed line). (Map: author.)

Gigli, 1970: 74–5, 78), we can assume that one of the main roads leading to the centre followed this route. Another presumably main route approaches Tuscania from the southeast through the Vallata del Marta cutting (4.0–5.6 m wide), and passes a cluster of tombs (Quilici Gigli, 1970: 34–43, figs 17–36); although this large cutting was part of the Roman *Via Clodia* in antiquity, the dating of the sepulchral area as from the seventh to the second centuries BC (Rendeli, 1993: 432, no. 2) suggests an earlier origin.

In addition, it appears that road-cuttings leading to necropoleis or sepulchral areas generally exhibit narrower widths than roads that simply pass burial grounds; in some cases, such as the via Cava dell'Annunziata at Pitigliano (only 1.3 m wide at the narrowest point), the cutting leading to the necropolis is actually so narrow that it may have prevented commonplace vehicular traffic.³⁶ As some cuttings — the Annunziata cutting at Pitigliano in particular — are monumental in every other sense than in width, as regards wheeled vehicles the narrow gauge should be interpreted as a deliberate feature.³⁷

MONITORING AND DEFENCE

Road-cuttings leading to settlements and centres also enabled the monitoring of traffic from an elevated position and provided excellent defensive qualities by confining the incoming traffic to a narrow space that could be blocked easily. Defending from an elevated position using javelins, stones or other projectile weapons³⁸ against an enemy confined in a narrow corridor below was an obvious advantage, and added to the defence potential of the road-cuttings. The necessity of defence was probably one of the reasons for constructing the *trincea viaria* road cutting at *Crustumerium*; the moat dug in the seventh century BC to protect the southeast sector of the settlement circuit (Barbaro, Barbina and Borzetti, 2013: 25–7) also demonstrates the need to defend the centre from an outside threat (Fig. 7).³⁹

Considering the apparent importance of land-routes in Latium from the eighth century BC onwards (di Gennaro, 2000; Fulminante, 2012), the ability to detain traffic within a road-cutting could have proved advantageous also, considering the possible practice of exacting tolls from the people wishing to pass through or enter the centres (for example: Cifani, 2002b: 248; Fulminante, 2012:

³⁶ For narrower widths by burial grounds, see: Potter, 1976: 19; Quilici Gigli, 1976: 207–8, 231–5, 240–1, 244; Gasperini, 1999: 68–70, fig. 16; Enei, 2001: 140–2; Nanni, 2005: 34, 48–50; Tuppi, 2010: 281–2. For the via Cava dell'Annunziata at Pitigliano, see: Nanni, 2005: 34; cf. Colonna di Paolo and Colonna, 1970: 77. See also: Ward-Perkins, 1961: 10.

³⁷ See also: Tuppi, 2012: 147.

³⁸ See, for example, Xenophon's *Hellenica* (7.1.19) for an account of Corinthian tactics against the Thebans.

³⁹ See also: Togninelli, 2009: 15.

11–2):⁴⁰ the incoming traffic could be monitored, directed and possible fares collected in an orderly fashion.

TERRITORY AND MONUMENTALITY

The definition of territory presupposes communication between individuals. Boundaries have to be defined, agreed on and maintained, but the area encompassed within the boundaries has to communicate control as well. Whereas boundaries might be defined by natural topographical features such as rivers and valleys (Sack, 1986: 34; Edlund-Berry, 2006: 116–17, 120) in addition to artificial markers (Haynes, 2000: 71; Cerchiai, 2012: 140–1), the landscape itself had to be modified artificially in order to declare clearly presence and control:⁴¹ this could be achieved most effectively through monumentality.

The two essential attributes that define monumentality are scale and permanence (Holtorf, 1997: 45);⁴² a monument needs to stand out and instil awe, and be able to withstand the test of time so that the message it conveys is not forgotten or buried. The road-cuttings in central Italy, still visible and admired today, fulfil these requirements with ease (Appendix). However, monumentality is not a feature achieved without effort: the construction of monumental road-cuttings required tools for the job, engineering skill, a suitable labour force and effective organization, to say the least (Tuppi *et al.*, forthcoming).⁴³ The amount of work, effort and resources invested into such projects admittedly could be justified by the logistical and infrastructural benefits as well as the defensive aspects that were increasingly necessary for the growing centres and accumulation of wealth, but the monumental scale of the cuttings also enabled a subjective function: the cutting itself was an impressive sight that expressed a statement of resources and power (Trigger, 1990: 121–2, 124–8; Meyers, 2012: 13–14; cf. Kolb, 2005: 173–4), in the same manner that massive Orientalizing tumuli mounds⁴⁴ acted as reminders of élite status and

⁴⁰ For the practice of exacting tolls, see also Livy (2.9.6), Strabo (*Geographica* 4.1.8) and Suetonius (*De Vita Caesarum, Vitellius*, 14.2). On the re-establishment of routes and redirection of traffic during the Iron Age, compare: di Gennaro, 2000: 111.

⁴¹ The landscape could, of course, contain unaltered natural places of significance (for example: Bradley, 2000), but such locations did not necessarily automatically communicate their meaning and importance to an outsider, whereas artificial constructions instantly declared human occupation and influence.

⁴² See also: Meyers, 2012: 2.

⁴³ On the construction of the monumental *fossato* south of *Norchia*, see also: Colonna di Paolo and Colonna, 1978: 58; on the construction projects in Archaic Rome: Cifani, 2010; and on monumental architecture: Trigger, 1990: 121–2.

⁴⁴ For instance, Tumulus II in the Banditaccia necropolis at Cerveteri was used for burials from the beginning of the seventh century to the second half of the sixth century BC (for example: Marconi Cosentino, Gallavotti Cavallero and Aiello, 1995: 36–8).

landownership in the seventh century BC.⁴⁵ Considering that *Crustumarium*, like many other pre-Roman centres in central Italy⁴⁶ appears to have had multiple road-cuttings leading to the settlement area,⁴⁷ it undoubtedly projected an image of a bustling and prosperous centre. Furthermore, if the place to which the cuttings led (whether a stately settlement or a solemn necropolis) was obstructed from view upon entering the road cutting, the moment when the whole scene unfolded as the traveller emerged from the cutting was without a doubt all the more impressive — an experience that is still possible in *vie cave* around Pitigliano and Sovana (Feo, 2011: 81).

Road-cuttings also appear to have functioned in tandem with necropoleis not later than from the seventh century BC onwards in utilizing their monumentality at Etruscan centres: at Tuscania, the best road in terms of logistics directed the people heading to the centre through road-cuttings and past the necropoleis of Pian di Mola and Colle San Pietro before entering the settlement (Rendeli, 1993: 247–53, figs 96, 98). The same pattern is repeated at most of the centres discussed in this paper: Capena, Cerveteri, Sovana, Castel d’Asso, Corchiano, Blera, Civitella Cesi, Ischia di Castro, Tolfa, Monterano and *Veii* in southern Etruria, and *Crustumarium* in Latium, to mention a few.⁴⁸ Considering that road-cuttings often are found in close proximity to burials (Appendix),⁴⁹ these routes were evidently capitalized on for reasons other than the pragmatic; they led the travellers past constructions that projected powerful symbolic statements, such as road-cuttings (‘we have the resources and power to construct these’), necropoleis and tumuli (‘we have been here long and thus

⁴⁵ See, for example: Torelli, 1980: 50, 54–5; Zifferero, 1991; Parker Pearson, 1999: 157, 196–7; Haynes, 2000: 72; Zifferero, 2002: 252, 261; Bartoloni, 2010: 172, fig. 18; Cataldi and Mandolesi, 2010; Riva, 2010: 125–6; Cascino, Di Sarcina and Rendeli, 2012: 343; Tuppi, 2012.

⁴⁶ For example: *Falerii Veteres* — Moscati, 1986: 64–5, 69; *Veii* — Ward-Perkins, 1961; Corchiano — Moscati, 1985: 93; Quilici, 1989: 498; Quilici, 1990: 208–9; Ambrosini, Maurizi and Michetti, 1996: 52; Pitigliano and Sovana — Feo, 2011. See also the results of magnetometer and resistivity surveys at Vignale, *Falerii Veteres* (modern Civita Castellana) published by Claudia Carlucci and her colleagues (2007: 63–79).

⁴⁷ In addition to the *trincea viaria* road-cuttings visible on the site, other possible cuttings could be seen in a poster illustrating the results of a magnetic survey conducted at *Crustumarium* in 2011 by the research team from the University of Groningen, presented in the ‘Unveiling Crustumarium’ exhibition in the Groningen University Library, 31 January–26 March 2013.

⁴⁸ For Capena, see: Jones, 1962: 180–1; for Cerveteri: Enei, 2001: 133–4, 192, figs 141, 349; for Sovana: Bottini, 2001; for Castel d’Asso: Romanelli, 1986: 81; for Corchiano: Frederiksen and Ward-Perkins, 1957: 116; for Blera: Quilici Gigli, 1976: 42, 96–7, 185–8, 194–200, 207–8, 223–5, 241, 244–5, 300; Ceci and Schiappelli, 2005; for Civitella Cesi: Hemphill, 2000: 37, 145–6 and related map; for Ischia di Castro: Rendeli, 1993: 192–3, figs 70–1; for Tolfa: Naso, 1990: 90; Marconi Cosentino, Gallavotti Cavallero and Aiello, 1995: fig. 62; for Monterano: Cerasuolo, Pulcinelli and Latini, 2005: 844–5, fig. 1; for *Veii*: Ward-Perkins, 1961: 15, 40–7, fig. 12; Cascino, Di Sarcina and Rendeli, 2012: 343; also Kahane, Murray Threipland and Ward-Perkins, 1968: 30–1, 33, 54; and for *Crustumarium*: Jarva *et al.*, 2013.

⁴⁹ A total of 63 of the 110 (c. 57%) road-cuttings discussed in this paper lead to burials or pass burial grounds. The link to burials and burial grounds may be related also to the development of funerary practices and the concept of liminal space (Tuppi, 2012).

own the land'), which arguably evoked awe and respect. Furthermore, at *Falerii Veteres*, a road-cutting is associated with the sanctuary area of Vignale, dated no later than the fifth century BC (Carlucci *et al.*, 2007: 44–5, 98–104);⁵⁰ as with necropoleis, cuttings definitely also enhanced the monumentality of temples and sacred areas. The emergence of road-cuttings roughly at the same time as rich *tumulus* burials in the late eighth/early seventh century BC suggests that the growing centres in central Italy, which had developed from bronze age segmentary communities (for example: Barker, 2005: 59) into territorial proto-state societies (for example: di Gennaro, 1986),⁵¹ endeavoured to 'politicize' their regions (for example: Whitehouse, 1995: 85): the cuttings, along with burial mounds, could feature in this scheme as building-blocks in constructing a socio-political landscape of power.

INSCRIBED ROAD-CUTTINGS

Several road-cuttings have inscriptions on their walls, spanning from no later than the Archaic period to medieval times,⁵² a fact that attests to the function of monumentality as a medium throughout the ages.

The inscribed cuttings discussed here are found either at burial grounds or along routes between settlements; the most common inscriptions are names, but markings and symbols occur as well. Names carved on road-cuttings linked to burials, such as the Etruscan name *Verthna* on the Cavone cutting at Sovana (Rix, 1991: 128, AV 0.14–6; D'Erme and Pellegrini, 2005),⁵³ *Cleiina* on the Grotta Porcina cutting at Blera (Quilici Gigli, 1976: 234; Quilici, 1989: 468; Rix, 1991: 80, AT 0.12; Naso, 1996: 156–9), or inscriptions on Pian Cerese (Enei, 2001: 140–2, fig. 170), Monte Abbadoncino (Enei, 2001: 126) and the Via degli Inferi cuttings at Cerveteri (Rix, 1991: 41–2, Cr 5.1, 5.5), and Tenuta Terrano cutting at Civita Castellana (Frederiksen and Ward-Perkins, 1957: 143), may have identified the deceased buried in the vicinity: regarding the scarcity of public Etruscan writings recognized by current research (Benelli, 2012: 439), these inscriptions should be interpreted as attestations of the private (and ceremonial) nature of these cuttings. Markings, such as the inscribed V's found northeast of Tolfa, could have stood for an abbreviation of

⁵⁰ On Greek sacred roads, see also: Forbes, 1965: 142–3.

⁵¹ See also: Pacciarelli, 2001; Guidi, 2008. On the terminology of society classifications, see, for example: Renfrew and Bahn, 2008: 178–81.

⁵² For these inscriptions, see: Frederiksen and Ward-Perkins, 1957: 116–18, 141–2; Quilici Gigli, 1976: 207, 234, 271, figs 376–7, 500; De Ruyt, 1978: 38–9; Moscati, 1985: 93, 95; Quilici, 1989: 468–9; Quilici, 1990: 205–19; Giacobelli, 1991: 63; Enei, 2001: 126, 140–2, 246; Munzi, 2001; Ceci and Costantini, 2008: 121–2, 260, fig. 3.1; Feo, 2011: 151–2; Cifani, Ceccarelli and Stoddart, 2012: 167; see also: Benelli, 2012: 438; Santella, 2013.

⁵³ See also: Feo, 2011: 152.

VLTRA in the sense of ‘outside’, demarcating a border of a designated area or region (Gasparini, 1989: 49; Scardozi, 2007: 27, n. 57).⁵⁴

Names, amongst other inscriptions, can be seen also on the walls of the Cava di Castro cutting southeast of the Etruscan settlement of *Castro* (De Ruyt, 1977; De Ruyt, 1978: 38–9; Rix, 1991: 122–3, Vc 0.21–6, 0.42, 0.46), the Cava Buia cutting at *Norchia* (Giuliani, 1966: 8–12),⁵⁵ the Cannara cutting at Corchiano (Moscati, 1985: 93; Quilici, 1990: 208–9, 217–19; Rix, 1991: 21, Fa 0.7–8), the Fantibassi cutting west of *Falerii Veteres* (Di Stefano Manzella, 1996: 223–4),⁵⁶ the Castelluzza cutting at Bomarzo (Scardozi, 2007), the Le Pozza cutting at Blera (Santella, 2013) and the Cavetta cutting at Monte Sant’Angelo in the *Ager Veientanus* (Munzi, 2001). The inscriptions may have offered information concerning the route or the cutting; for example, the earliest case to my knowledge is an inscription presumably stating the name of the patron of the Le Pozza road-cutting at Blera, which can be dated to the end of the sixth century BC based on epigraphic evidence (Santella, 2013: 62), suggesting that the practice of ‘signing’ public construction projects dates back to Archaic infrastructural development in southern Etruria. The Etruscan inscription on the Cavetta cutting is dated slightly later: according to Massimiliano Munzi (2001), the inscription pertains to the fifth century BC. The rest of the known inscribed cuttings date mostly to the second century BC or later, but still apparently serve the same purpose: Cairoli Fulvio Giuliani, for example, interpreted the Latin inscription dated to the second century BC found on the wall of Cava Buia at *Norchia* as a dedication of the refurbishing of the road (Giuliani, 1966: 8–12). A similar message appears to be conveyed by the inscription written in Latin on the Fantibassi cutting: according to an interpretation proposed by Ivan Di Stefano Manzella (1996: 223–4), the inscription, which also possibly dates from the second century BC, reveals that the cutting was widened and probably notes the official responsible for the operation. Giuseppe Scardozi (2007: 22–7) has come to the same conclusion concerning the interpretation of the Etruscan and Latin inscriptions on the Castelluzza cutting, which probably date between the end of the second century and first half of the first century BC.

Other inscriptions in the Fantibassi cutting (Gamurrini *et al.*, 1972: 246–8) seem to pre-date the Latin text, and are probably Faliscan markings and names related to the original construction of the cutting, or simply random graffiti (Di Stefano Manzella, 1996: 224); even if the message conveyed by the inscription did not offer any useful information, as in the cases of graffiti, the inscription

⁵⁴ See also: Edlund-Berry, 2006: 122. To give a non-road-cutting example of territorial markings, the Rubiera cippus II, dated to the end of the seventh century BC and located on the bank of the river Secchia, carries the name *kuvei puleisnai* and the title *zilath mi salalati amake*, and probably functioned as a boundary-marker for the territory of the main centre of Bologna in antiquity (Haynes, 2000: 71; Edlund-Berry, 2006: 123; Cerchiali, 2012: 140–1); see also: Rasmussen, 2005: 83–4.

⁵⁵ See also: De Ruyt, 1978: 39.

⁵⁶ On the inscription *Larth Velarnies* at the Cannara road-cutting in the vicinity of modern Corchiano, see also: Dennis, 1848: 156; Moscati, 1985: 93; Quilici, 1990: 208–9, 217–19.

itself, identifiable for instance as of Faliscan origin, could indicate a demarcation of territory (Potter, 1979: 54–5; cf. Benelli, 2012: 439). In the case of the Castelluzza cutting, the apparently contemporary Etruscan and Latin inscriptions at the very least attest to the use of both languages at Bomarzo in the late Republican period (Scardozzi, 2007: 27).

Although the epigraphic evidence concerning the utilization of road-cuttings as a public medium in the Archaic period is scarce, this may be due to later refurbishments, as seen in the examples presented above; indeed, our earliest case, the sixth-century BC inscription *mi larθ ninu turace* on the Le Pozza cutting, was on a public road and thus visible to all travellers. The names inscribed along public road-cuttings presumably relate to the construction and/or modification of the respective cuttings, and, particularly in the latter case, the known examples often date later than the sixth century BC. Based on the Latin inscriptions mentioned above, it appears that infrastructural renovations took place in southern Etruria in the second century BC,⁵⁷ during which time the modifications and parties responsible were noted on the walls of the existing cuttings, presumably following the earlier Archaic practice.

CONCLUSIONS

Road-cuttings in seventh- and sixth-century BC central Tyrrhenian Italy functioned as useful tools in improving the logistics of the urban centres. In an effort to establish and maintain territories, and to declare status and wealth, the Etruscan élite began to utilize burial mounds on a larger scale as monuments that dominated the surrounding landscape along the main routes. However, the utilization of monumentality in creating a politicized territorial landscape could be approached also via road-cuttings: cuttings several metres deep that facilitated mobility undoubtedly instilled awe in the people travelling through them, but also exerted concrete control on the traffic simply through their regulated width — both attributes were useful especially at the entrances to the settlements and centres. In many cases the entrances to the growing necropoleis were also fashioned as road-cuttings, presumably in order to emphasize the importance of the area in a religious as well as psychological sense. In some cases the cutting is too narrow to allow unhindered vehicular traffic, which supports the hypothesis that these cuttings had functions other than purely practical: considering that quarrying a road into tuff was an arduous task that required time, organization and labour, it should be assumed that every road-cutting was constructed for a well-conceived purpose.

Road-cuttings occasionally carry ancient inscriptions on their walls. The most common inscriptions are names, but other markings and symbols also occur.

⁵⁷ Presumably as a part of the Romanization process and the construction of the great consular roads across central Italy (for example: Forbes, 1965: 146–8, 156).

The inscribed names on road-cuttings leading to tombs and necropoleis possibly refer to the deceased buried in the vicinity; names and markings on cuttings not linked to burials are commonly associated with the construction or modification of the cuttings. In addition to the intended message, the inscriptions may have conveyed other information to the traveller: the names of the ruling élite or jurisdiction of the territory, or even some aspects of its ethnic identities as revealed by the language of the inscription.

Road-cuttings thus can be viewed as physical components of the social infrastructure, markers in the political landscape and occasionally even as a medium of written information. They play a notable part in the early urbanization of southern Etruria and of Latium as well: monumental tumuli burials benefited only the élite, but road-cuttings, while sending the same message of power, wealth and monumentality, also functioned as practical facilities that improved the material infrastructure, directed and controlled traffic as well as defined the territory.

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APPENDIX. Road-cuttings discussed in the text.⁵⁸

<i>Vicinity and location</i>	<i>Width Depth (m)</i>	<i>Relation to burials</i>	<i>Dating (centuries BC)</i>
ACQUAROSSA			
Via Principale Ovest	c. 4.0 / 3.0–5.0	–	(late eighth?–) seventh
BLERA			
Boccale Cave	2.0–2.2 / 6.0–10.0	–	–
Casale Sciabolino	1.7 / 1.0	–	–
Casale Valle Falsetta	2.6 / 2.5	Leads to burials	fifth–third?

Continued

⁵⁸ References and data concerning road-cuttings utilized in this list: *Acquarossa*: Östenberg, 1986: 35, 96; *Blera*: Gamurrini *et al.*, 1972: 81; Quilici Gigli, 1976: 42, 96–7, 143–4, 179–81, 185–8, 194–200, 207–8, 223–5, 234–7, 240–1, 243–5, 261, 271, 300, figs 31, 162, 164–6, 243, 313–16, 326–30, 343, 372–8, 398–401, 418–27, 430, 435–7, 443–6, 477–8, 496–500, 567–71; Quilici, 1989: 468; Ceci and Schiappelli, 2005; measurements concerning the Ponte della Rocca cuttings confirmed by the author on site; *Bomarzo*: Scardozi, 2007: 20–1; *Capena*: Jones, 1962: 180–1; *Castel d’Asso (Axia)*: Colonna di Paolo and Colonna, 1970: 55, 75–80, pls XLIV, CLX, CCXLV; Romanelli, 1986: 81; Quilici, 1989: 490–1, fig. 15; *Cerveteri (Caere)*: Nardi, 1985: 158–62; Nardi, 1989: 519–20, 522, n. 27; Enei, 2001: 125–6, 133–4, 140–2, 187, 192, 201, 245–6, 252, 263, 270, 282, 289, figs 141, 159, 170, 349, 461–4, 564–5; measurements concerning the Via degli Inferi by the author; *Civita Castellana (Falerii Veteres)*: Frederiksen and Ward-Perkins, 1957: 133, 143, 145; Gamurrini *et al.*, 1972: 246–8; Moscati, 1985: 95; Moscati, 1986: 64–5, 69; Moscati, 1988: 42–3, 51–2, fig. 4, pl. VIII; Quilici, 1990: 200; *Civitella Cesii*: Hemphill, 2000: 35–7, 80, 84, 145–6, figs 27–8, 116; *Corchiano*: Frederiksen and Ward-Perkins, 1957: 116, 123; Moscati, 1985: 93; Quilici, 1989: 498; Quilici, 1990: 208–19; *Ambrosini*, Maurizi and Michetti, 1996: 52; *Crustumerium*: measurements concerning the *trincea viaria* by the author; *Eretum*: Quilici Gigli and Santoro, 1995: 660; *Grotta Porciosa*: Frederiksen and Ward-Perkins, 1957: 167; *Ischia di Castro (Castro)*: De Ruyt, 1978: 36; Quilici, 1989: 471, fig. 4.23; Rendeli, 1993: 191–3, 387–8, 397–8, figs 70–1, 77; *Monterano*: Marconi Cosentino, Gallavotti Cavallero and Aiello, 1995: 89; *Cerasuolo*, Pulcinelli and Latini, 2005: 843–5, figs 1–2; *Nepi*: Frederiksen and Ward-Perkins, 1957: 92–6, figs 7–8; Cifani and Munzi, 1995: 388; Cifani, Opitz and Stoddart, 2007: 171, figs 2–5; *Norchia*: Colonna di Paolo and Colonna, 1978: 58, 60–3, pls XXXVI, LXIX; Quilici, 1989: 464, 468–71, figs 4.20, 7; Barbieri, 1991: 96; *Pitigliano*: Nanni, 2005: 34; *Rome*: Bedini, 1990; Quilici, 1992: 20, fig. 2; *Sovana*: Bottini, 2001: 36–7; D’Erme and Pellegrini, 2005; Nanni, 2005: 30; Feo, 2011: 81, 83; *Sutri*: Duncan and Reynolds, 1958: 67, fig. 3; Morselli, 1980: 80–1, 97–8, figs 127–8, 150–1; Quilici, 1989: 486–9, figs 14.2–5; *Tolfa*: Naso, 1990: 90; Marconi Cosentino, Gallavotti Cavallero and Aiello, 1995: fig. 62; measurements concerning the *Pian della Conserva* cutting confirmed by the author; *Torrimpietra*: Tartara, 1999: 86–8, 120, figs 96–7, 99, 159; *Tuscania*: Quilici Gigli, 1970: 34–43, 47, 49, 51, 74–7, 101, 103, figs 17–36; Rendeli, 1993: 247–53, 432, figs 96, 98; *Veii*: Ward-Perkins, 1961: 10–11, 15, 19, 40–7, fig. 12; Ward-Perkins, 1962a: 1,640; Judson and Kahane, 1963: 88; Kahane, Murray Threipland and Ward-Perkins, 1968: 30–1, 33, 47–50, 54; Rossi and Iorio, 2009: 561–2; Cascino, Di Sarcina and Rendeli, 2012: 343.

APPENDIX *Continued*

<i>Vicinity and location</i>	<i>Width / Depth (m)</i>	<i>Relation to burials</i>	<i>Dating (centuries BC)</i>
Cerracchio	1.5–2.0 / –	Leads to burials	fifth–fourth?
"	c. 2.3 / 4.5	Leads to burials	fifth–fourth?
Fosso dei Caprari	1.55–1.7 / 4.1	Passes burials	–
"	c. 3.0–4.5 / 2.5	–	–
Grotta Porcina	1.5 / 2.0	Passes burials	sixth
"	1.6 / 2.0	Leads to burials	sixth?
Pian dell' Anguillara	1.85–3.4 / 2.5–7.5	Leads to burials	sixth–third
Pian Gagliardo	2.55–3.5 / 2.5	Passes burials	–
"	2.7 / 4.0	–	–
Ponte della Rocca	1.8–2.0 / 1.1	Passes burials	seventh–fifth?
"	c. 2.5 / –	Passes burials	–
"	3.3–3.9 / 8.0–9.0	Passes burials	–
Pontone di Graziolo	1.86–3.25 / 3.5–6.1	Passes burials	eighth–fifth?
Ricozzano	c. 2.1–2.9 / 7.0–8.0	–	–
Sarignano	3.8–4.8 / 7.0–8.0	Passes burials	–
BOMARZO			
Castelluzza	2.15–4.6 / 2.0–5.5	–	–
CAPENA			
Monte Pacciano	5.0 / 3.0–4.0	Passes burials	–
CASTEL D'ASSO (AXIA)			
Castel d'Asso	4.2 / c. 4.5–15.0	Passes burials	–
Vaccareccia	c. 2.0 / –	Passes burials	–
Via Occidentale	1.4–1.5 / –	Leads to burials	–
"	1.6–2.0 / –	Leads to burials	–
"	c. 2.0 / –	Leads to burials	–
Via Orientale	1.3–1.4 / –	Leads to burials?	–
"	c. 2.0 / –	Passes burials	–
CERVETERI (CAERE)			
Casale del Ferraccio	c. 3.5 / 5.0	–	–
Ceri	1.65 / 5.0	Leads to burials	seventh
"	1.7 / c. 6.0	Leads to burials	seventh
"	1.8 / 2.5–8.0	Leads to burials	seventh
"	2.1 / c. 3.0	Passes burials	seventh
"	c. 8.0 / c. 10.0	Passes burials	seventh–sixth
Due Ponti	2.5 / –	–	–
Fosso della Caldara	c. 4.0 / 4.0–5.0	–	–
Fosso di Fonticiano	c. 7.9 / –	–	–
Monte Abbadoncino	c. 1.4 / c. 2.0	Leads to burials	seventh?
"	c. 2.7 / 2.5	Leads to burials	eighth?
Monte Abbadone	c. 2.0 / 2.5	–	–
Pian Cerese	1.5 / 4.0–15.0	Leads to burials	seventh–sixth
"	1.8 / 3.0–7.0	Leads to burials	seventh–sixth
Poggio Formicoso	c. 4.0 / –	–	–
Polledrara	2.25 / 8.0	Leads to burials	seventh–fourth
"	4.0–5.0 / 5.0–6.0	–	–
Ponte Vivo	c. 4.0 / 4.0–5.0	Passes burials	–
Porrazzeta	c. 2.0 / –	–	sixth?

Continued

APPENDIX *Continued*

<i>Vicinity and location</i>	<i>Width Depth (m)</i>	<i>Relation to burials</i>	<i>Dating (centuries BC)</i>
Porta Coperta	5.6 / <i>c.</i> 8.0	Passes burials	sixth
Quarto del Cecio	3.0 / –	–	–
"	6.4 / 7.0–12.0	–	–
Quarto di Montelungo	3.2–3.5 / <i>c.</i> 8.0	–	–
Tre Cancelli	<i>c.</i> 4.0 / 3.0–4.0	–	–
Via degli Inferi	2.3 / –	Leads to burials	seventh
CIVITA CASTELLANA			
<i>(FALERII VETERES)</i>			
Cava del Lupo/Via Velata	<i>c.</i> 3.0–3.6 / 5.0–6.0	Leads to burials	seventh–third
East Entrance?	<i>c.</i> 1.5 / –	–	–
Fantibassi	1.7–4.0 / 5.0–15.0	–	–
North Entrance?	<i>c.</i> 1.5–2.0 / 6.0–9.0	–	–
Strada delle Mole	<i>c.</i> 1.5 / –	–	–
Tenuta Terrano	<i>c.</i> 2.5–3.0 / –	Passes burials	–
CIVITELLA CESI			
Casentile-Lampregnana	– / –	Passes burials	eighth/seventh– fifth/fourth
Dogana	<i>c.</i> 4.0 / –	–	seventh/sixth?
Pian Fagiano/Costa	4.0 / –	–	–
Acquafredda			
CORCHIANO			
Casale Sciardiglia	3.0–4.0 / 2.0–3.0	Passes burials	–
Cannara	<i>c.</i> 3.0 / <i>c.</i> 5.0	–	–
Santa Edigio	2.1 / 9.0–10.0	–	–
Spigliara	2.2–2.5 / <i>c.</i> 15.0	–	–
CRUSTUMERIUM			
Trincea Viaria	<i>c.</i> 2.0–4.0 / <i>c.</i> 5.0–8.0	Passes burials	seventh
ERETUM			
Necropolis entrance?	– / –	Leads to burials	seventh–sixth?
GROTTA PORCIOSA			
Casale Santa Lucia	2.0 / 7.0	–	–
ISCHIA DI CASTRO			
<i>(CASTRO)</i>			
Il Pontone	2.0 / –	Leads to burials	sixth
Cava di Castro	4.0–5.2 / <i>c.</i> 18.0	–	seventh–fifth?
MONTERANO			
Cavone	<i>c.</i> 2.2 / 9.0	–	seventh–fifth
La Palombara	<i>c.</i> 2.0–3.5 / 6.0–7.0	Passes burials	seventh–fifth
Monterano Nord	<i>c.</i> 2.5 / 3.0–5.0	–	seventh–fifth
Monterano Ovest	<i>c.</i> 2.6 / 6.0–7.0	–	seventh–fifth
NEPI			
Tenuta Franca	<i>c.</i> 2.0 / –	Passes burials	seventh–third
"	<i>c.</i> 2.0–3.0 / –	–	seventh–third
"	4.0–9.2 / 9.0–10.0	Leads to burials	seventh–sixth

Continued

APPENDIX *Continued*

<i>Vicinity and location</i>	<i>Width / Depth (m)</i>	<i>Relation to burials</i>	<i>Dating (centuries BC)</i>
NORCHIA			
Cava Buia	2.0–2.5 / 7.0–8.0	–	–
Norchia Ovest	2.0–2.2 / –	Passes burials	–
Norchia ‘Tunnel’	<i>c.</i> 2.0 / <i>c.</i> 2.0	Passes burials	–
Via Cava	1.4–2.8 / <i>c.</i> 10.0	Passes burials	–
Via Principale	2.2–2.4 / –	Passes burials	–
PTIGLIANO			
Annunziata	1.3–2.0 / –	Leads to burials	–
ROME			
Tor de’ Cenci	2.0–2.5 / 1.5–2.5	–	(late) eighth?
SOVANA			
Il Cavone	3.0–4.0 / 20.0	Leads to burials	–
San Sebastiano	<i>c.</i> 3.0 / <i>c.</i> 20.0–25.0	Leads to burials	seventh–sixth
SUTRI			
Madonna del Carmine	3.1–4.1 / 7.0–10.0	Passes burials	–
Mazzano	1.9–2.5 / 5.0–7.0	Leads to burials	–
Monte Fosco	2.7–3.5 / 6.0–11.0	–	–
TOLFA			
Pian della Conserva	1.9–2.0 / <i>c.</i> 1.8–3.0	Leads to burials	(seventh?–) sixth
TORRIMPIETRA			
Casale delle Quattro Casette	6.0–8.5 / –	Passes burials	seventh–sixth
Selciatella	1.7–2.05 / –	Leads to burials	sixth
TUSCANIA			
Capanna di Sasso	3.0 / <i>c.</i> 1.5	Leads to burials	seventh?
Pian di Mola	2.6–2.9 / –	Passes burials	–
"	3.6–3.9 / –	Passes burials	–
Pianoro Quarticcio	3.0 / 7.0	Leads to burials	seventh–sixth/ fourth–second
Scalette	<i>c.</i> 1.5 / <i>c.</i> 2.0	Passes burials	seventh?
"	4.8 / –	Passes burials	seventh?
"	5.0–7.0 / 12.0	Passes burials	seventh?
Vallata del Marta	1.4 / 1.6–2.5	Passes burials	seventh–second
"	1.7–3.3 / 4.5–9.0	Passes burials	seventh–second
"	2.2–2.8 / 3.0	Passes burials	seventh–second
"	<i>c.</i> 4.0–5.6 / <i>c.</i> 5.0	Passes burials	seventh–second
Vetralla	3.0 / –	Leads to burials	seventh–sixth
"	3.4 / –	Leads to burials	seventh–sixth
VEII			
Massimina	6.0 / –	–	sixth–fifth
Northeast Gate	3.15 / –	Passes burials	seventh
Portonaccio Gate	3.2 / –	Passes burials	seventh
Via Flaminia Ridge Tunnel	<i>c.</i> 3.0 / –	–	seventh–sixth?